THE RUBBER AGE AND TIRE NEWS

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August 25th
1917

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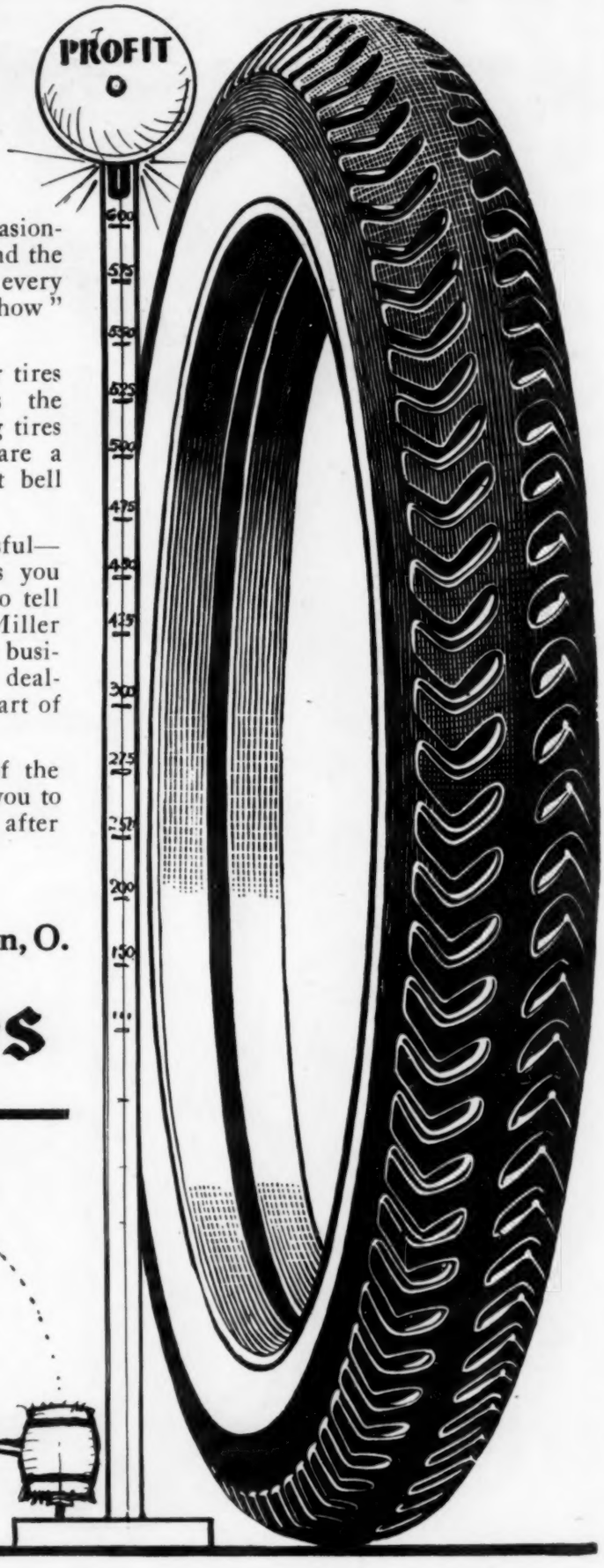

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THE RUBBER AGE AND TIRE NEWS

AUGUST 25, 1917 VOL. I. NO. 11

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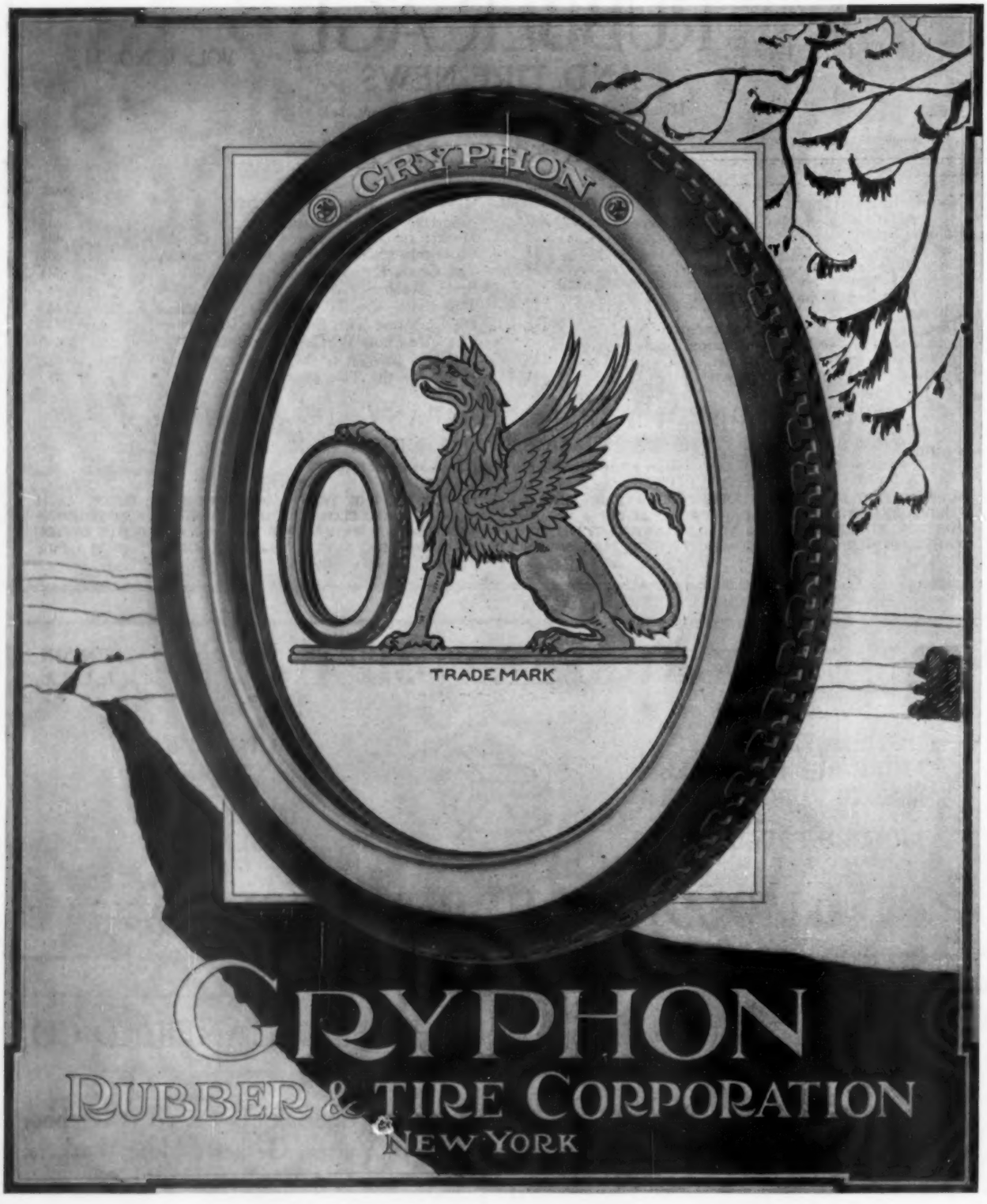
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THE
RUBBER AGE
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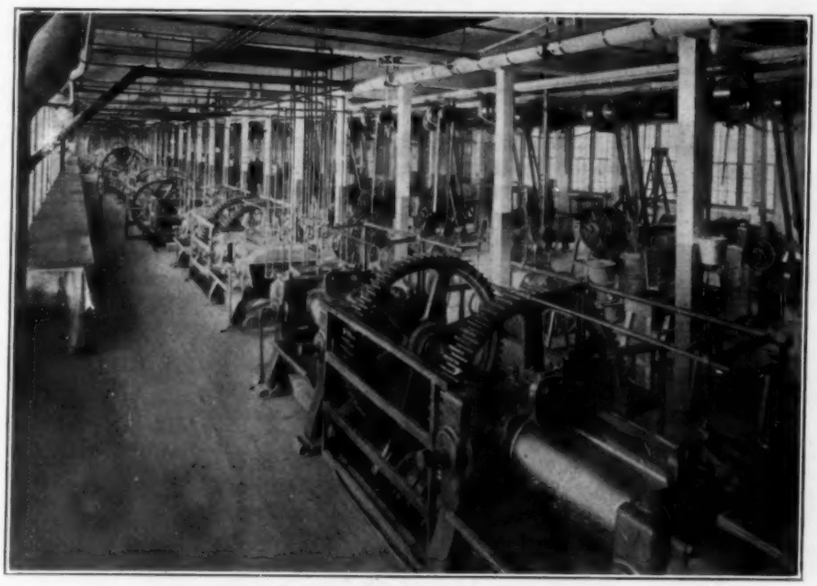
Manufacturing Insulated Wires and Cables—Compounds

Besides electrical resistivity, rubber wire and cable insulations must have such physical properties as elasticity, power to withstand pressure, shock, friction, heat, humidity and dampness. They must also withstand certain chemical actions, but, above all, they must be durable, for they are expected to last much longer than the general run of rubber goods.

In its crude state, rubber is highly sensitive to variations of temperature; it deteriorates comparatively rapidly and it is lacking in many of the other requisites for electrical insulating. To overcome these disadvantages manufacturers of insulated wire mix or compound crude rubber with various materials and vulcanize it.



Rubber Compounding and Insulating Department

The composition of rubber stock used for wire and cable insulating must be such as to minimize the danger of mistakes. Flaws in an insulation can have many consequences. They may even cause fires and in other ways result in irreparable loss and damages.

This being the case, perfection in the compounding of rubber for wire and cable insulating is of great importance, and requires more care than is generally needed in other lines of rubber manufacture.

In compounding and mixing rubber and other materials for insulating purposes, the prime object should be to produce a stock that will last.

It should be borne in mind that electrical insulating properties are inherent to rubber and are, therefore, no source of difficulty except where currents of exceptionally high tensions are to be transmitted. The main difficulty in making rubber insulation is in the securing of durability, which is the chief feature in the quality of the product.

Soft rubber goods are not generally calculated to last more than from two to three years, whereas electrical insulations are expected to last almost indefinitely.

The problem of durability would not be a difficulty were it not for the intervention of cost limitations which necessiate the use of fillers, which have a tendency to reduce the durability as well as many of the other qualities of vulcanized rubber.

It would be an easy matter to make a durable insulation out of a compound composed of 80 parts of rubber and 20 parts of sulphur and zinc oxide, but the problem becomes more complex when these proportions have to be reversed, yet excellent insulations answering all requirements are made of stock containing no more than 30 per cent of crude rubber, and it is only for exceptional purposes that a higher proportion of pure gum is used in an insulating compound.

The average insulation contains substantially less than 20 per cent of crude rubber, yet they are just as durable and their insulating power is just as good as that of richer compounds.

Many insulating compounds contain so little crude rubber that it would hardly be correct to call them rubber compounds were it not for the large percentage of reclaimed rubber used in them to take the place of the crude sort.

For ordinary house wiring a good insulation is made of the following compound:

	Pounds.
Crude rubber	4
Reclaimed	120
Talc, writing and zinc oxide	11
Lead oxide	2
Sulphur	1
Ozokerite	4 to 8

To obtain good results the following general rules should be closely

followed in compounding rubber insulating stock:

Dry Materials Essential

All ingredients used should be thoroughly dry, and to that end, should be stored in perfectly dry, well ventilated rooms. Bags and barrels containing compounding materials should never be stored in direct contact with a concrete floor; they should always rest on boards thick enough to keep them an inch from the floor.

It is advisable to have a system of steam pipe coils arranged between the floor and the ingredient containers. Such coils, in conjunction with similar ones running along the walls of the store room, insure against humidity and dampness affecting the materials.

Some factories, before using their compounding materials, store them in metal-lined bins provided with steam heating coils, while others even go to the trouble and expense of subjecting them to vacuum drying before mixing them into compounds.

Special care should be taken not to dampen materials in handling them, for once sulphur, whiting and the like are wet, it is no easy matter to dry them.

All compounding materials in powder form, and especially sulphur flour, have a tendency to absorb moisture. When sulphur flour becomes damp, sulphurous acid is likely to form, which has a particularly injurious effect upon rubber.

Sifting Materials

To facilitate mixing, all powdered materials must be finely pulverized. This is particularly true of earths, metal oxides and sulphur. However refined such materials may be when received from their manufacturers, they should be carefully sifted before use. In opening containers there is always danger of getting sand, wood splinters and other impurities into their contents, and all this foreign matter should be removed before using the materials in compounding.

Wire insulating factories, therefore, have to provide their compounding department with suitable mechanically operated sieves or sifting machines for refining dry compounding materials and eliminating foreign matter from them.

Best suited for this work are machines which consist, essentially, of revolving brushes arranged in helical fashion on a shaft so as to rub the materials through a trough-like sieve. The helical shape of the revolving brush arrangement carries along the foreign matter and gradually crushes the small lumps that may have formed in the material, forcing them through the sieve in a fine powder form.

The whole machine is enclosed in a housing. The material to be sifted is fed into it through a hopper and, after passing through the sieve, falls into a drawer-like tray or into a dry mixer.

Mixing Dry Materials

It is important that the dry materials be thoroughly mixed. Dry mixing or bolting machines are used for this purpose in large factories. These consist, mainly, of a long wooden or metal trough through which runs a shaft provided with helical blades similar to those of a lawn mower. This machine is sometimes combined with a small sifter similar to the one previously described and is placed above the mixer. This small sifter pulverizes the sulphur and feeds it into the mixer.

The several dry materials are weighed out in proper proportions and emptied into the mixer, those of lightest specific gravity being put in first. The machine is closed and set to work.

The revolving blades rapidly mix the materials into which the sulphur is gradually fed from the small sifter before mentioned. In this manner an intimately mixed, homogenous mass of dry materials is obtained. This compound is carried to the mixing rolls in one batch.

It is not always practical to mix the dry materials, one after the other, on mixing rolls, especially when such ingredients as ozokerite, wax, and paraffine enter into composition of the compound.

Dry material mixing mills are made to handle several hundred pounds of materials at a time, and besides giving better results, they save much time and cost in mixing large batches of stock.

Large factories have batteries of these machines, so that one or more can be reserved exclusively for bolting a given compound of dry ingredients.

This method of bolting dry materials together before sending them to the mill room explains the make up of the compounds as frequently given in recipes for rubber insulating stock. Thus the compound given at the beginning of this article would be given to the mill room as follows:

	Pounds.
Crude rubber	4
Dry compound	14
Reclaimed rubber	120
Ozokerite	4

The composition of the "dry compound" for one charge of the dry compound would be something like this:

	Pounds.
Talc	110
Whiting	110
Zinc oxide	110
Lead oxide	60
Sulphur	30

Though insulating factories are constantly improving their compounds and testing new ones, as a general rule it is not advisable to change mixtures that have proved their worth. No risks can be taken with rubber insulating, and changes should only be made after exhaustive and conclusive experiments.

As a general principle, compounds should be made as simple as possible and contain materials that can always be had in uniform qualities and adequate quantities. Simple materials such as whiting, chalk and the various metal oxides answer most all requirements.

It is useless and inadvisable to use in a same compound talc, chalk, whiting and infusorial earth, for any one of these, individually, would answer the same purpose as their combination does.

Each component part of a compound should have its specific purpose, and manufacturers strive to use, as far as possible, the same materials in all their mixtures.

Importance of Good Materials

The best compounding materials are none too good for rubber insulation compounds. However paradoxical it may seem, better costs are obtained by using good ingredients than are possible with inferior ones.

This is due to the relative difference between the price of rubber and most of the fillers, and other materials used in insulating compounds, which is so large that a variation of 20 to 50 per cent in the price of the latter has little effect on the cost of a compound. It is, therefore, poor economy to use cheap materials, and moreover, there is danger of producing a valueless compound. The same applies to rubber itself, of which only the best qualities should be used for insulating purposes.

Rubber coming in uniform quality is always preferable to sorts that are variable. From this point of view, plantation sorts probably offer the greatest advantages.

Classification of Materials

Materials entering into rubber insulating compounds can be divided into three classes:

(1) Substitute Materials, which partly or wholly take the place of crude rubber in the compounds.

(2) Compounding Materials, properly so called, that give specific properties to the pure rubber which it does not itself possess.

(3) Fillers, which are materials that are added to compounds for the unique purpose of increasing their mass. Fillers are used to reduce the cost of a compound and add no desirable properties to it.

It is not always an easy task to

properly classify the materials used in compounding. Material frequently belongs to two classes at a same time; a filler may answer two purposes in a same compound.

No True Crude Rubber Substitute

There is no true substitute for crude rubber, in so far as no material possesses to an equal degree all of the properties of rubber. But there are materials that possess some of the properties of rubber and can, therefore, be used as substitutes and to take the place of rubber for certain purposes.

For insulating purposes crude rubber can be replaced by reclaimed rubber, and inferior qualities of either can be used to take the place of good qualities. Reclaimed rubber is undoubtedly the best substitute for crude rubber.

Good reclaimed rubber, containing little oil, well dried and having no traces of free sulphur or acid, is excellent for insulating purposes and large quantities are consumed each year. It mixes readily with fresh rubber and can be fairly well revulcanized.

The only points of inferiority of good reclaimed rubber, compared with the crude, lie in that it is not so resilient, has less elasticity and has a tendency to darken light colored compounds. These drawbacks are of little or no consequence in wire and cable insulating. Reclaimed rubber lasts just as well as crude rubber and its electrical resistivity is just as great.

Two Reclaiming Methods

There are two methods of reclaiming rubber: The mechanical method and the chemical method.

In both methods old rubber goods are ground into a fine powder, metallic parts are removed, and in both cases sulphur is removed as far as possible. The principal difference between the two methods is that in the former the fabric parts are blown out of the powdered rubber by means of compressed air, while in the latter the fibers are destroyed by acids or alkali.

Rubber reclaimed from old footwear is considered best for insulating purposes, and wire and cable insulating factories take great care in testing the reclaimed rubber they use to make sure that it contains no traces of acids and that it is thoroughly dry, or use a recognized brand whose quality is known to be maintained.

Rubber substitutes, made by hot or cold processes of mixing of sulphur with vegetable oils, are not thought well of for insulating work because they sometimes contain a comparatively large amount of free sulphur or traces of acid. They are very little used in insulating wires and cables.

Mineral "Rubbers"

Mineral rubbers are used in some insulating compounds, but to a comparatively limited extent.

Sulphur is used in wire and cable insulating in the shape of sulphur flour and must be very finely pulverized and perfectly dry. Dampness in sulphur flour complicates mixing and can lead to the formation of sulphurous acids, which are injurious to rubber.

It is not practicable to mix sulphur into rubber compounds at the same time with oils, waxes and similar materials. The sulphur or the dry compound containing it should be worked into the mixture after the oils, waxes and the like have been incorporated.

The thorough and even mixing of sulphur in compounds is of the highest importance, and no more should be used than is positively needed to obtain the degree of vulcanization desired. The greater the quantity of fillers used in a compound, the more difficult it is to obtain a proper mixture of sulphur and the larger the quantity of sulphur required to obtain the desired results.

The greater the quantity of sulphur in a compound, the more difficult it is to combine it during vulcanization. There always remains a comparatively larger amount of free sulphur, which sometimes continues its vulcanizing effect after the vulcanizing process has ceased and always has a tendency to "bloom," that is, to come to the surface of the finished goods. Both of these conditions are to be guarded against and the proportioning of sulphur in a compound is one of the most difficult problems.

It is a mistake to base the proportion of sulphur on the quantity of crude rubber contained in a compound, at least in the case of compounds containing a large proportion of filler.

Further, the quantity of sulphur in a compound has much to do with the time and the temperature required for curing. In proportioning sulphur in a compound account must also be taken of the amount of metal oxides to be mixed with it.

Ozokerite and waxes help to prevent sulphur from blooming, but they are not generally used for the sole purpose of doing this. Sulphur chloride and other forms of vulcanizing ingredients are not used in wire and cable insulating.

Metal Oxides

Litharge is the metal oxide most widely used in rubber compounding; it has much to do with the vulcanization, which it has a marked tendency to accelerate. Litharge alone, without sulphur, will not vulcanize rubber, but it causes sulphur to combine more rapidly with rubber than it would otherwise.

The Role of Litharge

It is believed that the rôle played by litharge is that of a carrier of heat. However, litharge increases the speed of vulcanization, and it is added to rubber compounds to accelerate this curing when they are to be vulcanized in a dry heat.

In rubber insulating, litharge is mostly used in compounds for insulations when they are to be braided with colored silk or cotton and vulcanized after the braid has been applied. As the colors of the braid would be spoiled by steam, the insulations of these wires have to be vulcanized in dry heat.

Litharge should only be used in comparatively small proportions for the reason that a large percentage of it would start vulcanization while the compound would still be on the mixing rolls. This would make the stock hard and difficult to work, if not wholly useless.

Even greater precaution must be exercised in using litharge in compounds that are to pass through a tubing machine, for prevulcanization is even more likely to happen here than on the mixing rolls.

Litharge, like other lead compositions, adds a certain amount of toughness to rubber stock, and for this reason, as well as for its accelerating properties, it is widely used in rubber mixtures.

Lead Compositions Heavy

Lead compositions, however, are always heavy, and in goods sold by weight, as far as the consumer is concerned, they are objectionable, for in such instances they add more to the price than they do the actual value of the goods.

Further, litharge and other lead compositions cannot be used in white and light colored stock, for the reason that the combination of lead and sulphur forms lead sulphide, which darkens the goods.

Where neither color nor weight is of importance, red lead oxide can be used to add toughness to rubber stock.

As for everything else entering into insulating compounds, only the best qualities of lead compositions should be used, and in this connection it should be stated that copper compositions are frequently used for adulterating red lead oxides. The presence of copper in a rubber compound means short life for the insulation made from it.

Rubber Soles*

By Andrew H. King

Within the past two years the price of leather has advanced something like 120 per cent, and in fact genuine oak tanned leather is today extremely hard to get at any figure. People must have shoes, and since leather is beyond their reach a substitute must be found. Many times in the past the substitute has proved far superior to the original article. This case has been no exception, for with comparatively little effort rubber manufacturers have been able to turn out soles in every way equal, and in many ways superior, to any leather sole ever made.

The next step is education. Shoe manufacturers have had to learn the difference between rubber and leather. These differences while not great are nevertheless important, and the ways of building shoes have had to be altered a little to suit the new conditions. Shoemakers have done this because they were convinced of the virtue of rubber soles. The general public has been a bit skeptical, mainly because of the subconscious memory of the old tennis shoe. The best argument, perhaps, is in the appearance of high-priced $8, $10 and $12 rubber soled shoes bearing the name of reputable manufacturers.

There is quite a little psychology in it. For a thing to be appreciated by the people at large there must be a perfect whirlwind of enthusiasm, a craze, a sort of monomania. In time this subsides and the great outstanding utilitarian virtues of the thing are generally accepted. It is not long ago that bicycles were the fad. Then the bubble burst, people's attention was directed elsewhere. Sales fell off and prices with them. But the bicycle was not done for. It has a place in the world because it is of use. Today we have the three-speed bicycle and the motor wheel attachment. It is here to stay.

It might be possible that a good all-leather dress shoe cannot be retailed for less than $8 a pair, but certainly this is a high figure when the soles are of rubber. Necessity for the craze has now passed. People know that a first quality sole can be made of rubber, and the next thing is to bring it down within range of their buying power.

The chief advantages of the rubber sole over the leather one are:

(1) Greater wearing power; *i. e.*, longer life.

(2) Being by nature absolutely waterproof.

The rubber sole properly made will last anywhere from two to three times as long as the leather one. This consideration is by far the most important. Theoretically, for good shoes the uppers and the soles should wear out at about the same time. Ordinarily a shoe will stand at least two more sets of leather soles and heels.

Leather is a porous, fibrous substance and to be made waterproof requires the use of large quantities of various waxes and greases. Rubber is non-porous and watertight by nature. This fact constitutes the main objection to the rubber sole, for not only is it watertight, but airtight as well. It is claimed that leather allows the feet to breathe and in this way prevents burning. However, this is really only a minor point and can be remedied by using canvas uppers or by some form of a ventilator.

Another objection is that a rubber sole tends to slip on a wet pavement. With the first ones it was hardly possible to walk with them on rainy days. This trouble has now been almost entirely done away with by incorporating into the rubber cotton fiber or ground leather, or both. Consequently as the sole wears away a surface is produced which will absorb water and prevent slipping.

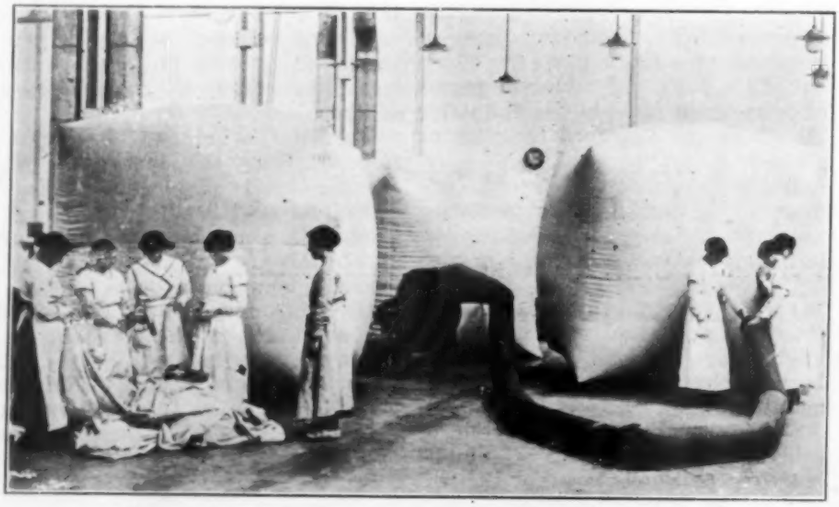
The first rubber soles were quite heavy. It did not seem possible to prepare a stock with the desired stiffness, strength, and quality without having it also of high specific gravity. This was not to be thought of, for the addition of even half a pound to the weight of one's shoes has an effect quite noticeable at the end of a day's work. The introduction of ground cotton waste and leather dust as compounding ingredients made it possible to bring the gravity down to 1.25-1.35.

A good sole will have a tensile strength slightly in excess of 1000 lb. per sq. in., but will have a very low stretch. It must not be brittle nor break across when given a surface cut and then bent double.

For very rough, heavy shoes, such as are worn by teamsters, iron workers, and railroad section men a new sole is coming into favor. It consists of a number of plies of heavy duck built like a belt, and stamped out to size with a die. Rubber or balata is used to cement the plies together. Such soles have rather unsightly edges but from the standpoint of service they are very satisfactory.

To the keen observer it must be apparent that leather shoes are going, in fact have gone, beyond the means not only of the poorer classes but that of the better middle classes as well. War conditions and speculation are largely to blame. It is the American way to beat such a condition not entirely by legislation but by invention.

A number of rubber soled shoes with canvas uppers are now being placed on the market. Canvas uppers can be waterproofed if desired in a number of ways. For instance, they can be waxed, rubber coated, or built of three plies, the inside one of fabric which has been frictioned and skim coated on both sides. The present offerings are but feelers which will, no doubt, be followed up with a good, all-round canvas-rubber shoe. Such a shoe must be neat appearing, serviceable, and have a long life. There is certainly no reason why it cannot be made.



MAKING DOUBLE TARGET BALLOONS IN BRITISH FACTORY

Underwood & Underwood.

* Extract from article in *Metallurgical and Chemical Engineering.*

The Influence of Pigments on Rubber*

By Maximilian Toch

The rubber industry is still empirical to a large extent, and much of this has been due to the fact that the practical superintendent of the rubber factory, like many a practical man who has no fundamental education, resents the interference of the laboratory in his methods, but this will be overcome to a large degree when the practical superintendent will have been raised from the ranks of the research laboratory.

The rubber in pure form, that is to say, mixed only with sulphur and vulcanized, is not used to a very large extent in the arts. Of course, certain materials like dental dam, elastic bands, high-grade inner tubes, and a few such articles must be exempted. In fact, I can include the rubber portion of the football. As a rule, the rubber bladder which is enclosed in the leather case is generally made of a very high type of pure vulcanized rubber only, but all the other articles must of necessity be compounded with either fillers or reinforcing pigments.

Please observe carefully that there is a great difference between the ordinary filler of rubber and the reinforcing pigment. If you take an ordinary article of commerce like a rubber door mat this may be composed of only 7 or 8 per cent of pure rubber, the balance being reclaimed rubber and heavy fillers; but, on the other hand, if we take an automobile tire and inner tube it is quite important that fillers should not be used but reinforcing pigments should be used, for an automobile tire is now sold entirely on its merits and in many instances a guarantee is given as to its longevity.

The principal fillers used are barytes, whiting, Paris white, clay, ground slate, silicious hematite, silicious black oxide of iron, and many of the minerals of these types.

The principal reinforcing pigments are sulphide of antimony, litharge, precipitated barium sulphate, precipitated barium carbonate, vegetable black, carbon blacks free from grease or oil, alum-free ultramarine blue, red lead, sublimated zinc lead, zinc oxide, and lithopone. There are a number of others which I shall also describe.

Fillers

Barytes is the natural sulphate of barium, which is crystalline and of itself has no chemical effect on any rubber composition as it is insoluble and infusible under ordinary conditions. It is, however, usually coarse, and there is some objection to it on account of its specific gravity, which averages 4.6.

Whiting and *Paris white* are the same, for they are both calcium carbonates. In time these materials are inclined to harden rubber, but one of the defects of the calcium carbonates is the amount of moisture that is adherent to them.

Clay is silicate of alumina and has the same defects as whiting if not more so, owing to the moisture which it contains and which is very likely to produce microscopic blowholes.

Ground slate as an earth consists of silicate of alumina containing iron and magnesia and is only to be recommended, after having been thoroughly dried, for coarse, cheap rubber materials.

Silicious hematite is a native oxide of iron containing about 30 per cent silica and 70 per cent iron oxide, Fe_2O_3. Sometimes, depending upon the locality, the iron content may run lower or higher. It is not to be recommended on account of its high specific gravity and on account of its coarseness.

Silicious black oxide of iron is really a black slate which contains a fairly large amount of magnetic iron oxide. It is used only with materials as a "make-weight."

Reinforcing Pigments

I am giving only a list of those that are used in large quantities, for there are many other materials with which this paper does not deal, as, for instance, the colors like chromium oxide, chromate of barium, chromate of zinc, sulphide of arsenic, and the blacks made from various carbonized materials.

Sulphide of antimony is one of the most important of the reinforcing pigments. This may contain no sulphur and be a pure antimony sulphide, or may contain as high as 17 per cent of sulphur. In this respect it has a great analogy to ultramarine blue, where the sulphur content and its stability as a chemical compound increases the life of the rubber rather than decreases it.

Litharge is the monoxide of lead, forms lead sulphide in the vulcanizing process, and, like antimony, produces a more or less soft rubber, practically the same as it does when used as a pigment with linseed oil. Red lead, which is a higher oxide of lead (Pb_3O_4), has a directly opposite effect on both rubber and linseed oil, for in time it produces a very hard, brittle rubber.

Precipitated barium sulphate, which is sold under various names, is either good or bad, depending entirely upon the method of its manufacture. If it is a straight barium sulphate made from a mixture of two materials which produces barium sulphate, and the precipitate washed and dried, it is one of the best reinforcing pigments which we have. If it is a by-product, however, it may contain oxide of barium and occluded moisture, which in a rubber tire would be harmful instead of producing good effects. This material is very largely known under the name of blanc fixé, tyre-lith or permanent white, and has almost entirely superseded, among the better manufacturers, the use of barytes.

Precipitated barium carbonate—The same is true of barium carbonate that is true of barium sulphate, excepting that barium carbonate can be decomposed. In an acid atmosphere it is not as good as barium sulphate.

The *vegetable blacks* are all carbons produced from either the roasting and reducing of willow, peach kernels, shells of nuts, and the like, and have a very slow drying effect on rubber; but in this connection carbon black is superior when free from grease or oil, and although it retards curing just as it retards drying in linseed or China wood oil, it inversely prolongs the life of the rubber.

Sublimed zinc lead has come into use only within the last ten or twelve years. It varies in composition from 5 per cent of sulphate of zinc and 95 per cent of oxide to 50 per cent of sulphate of zinc and 50 per cent of oxide of zinc. At all events, it has the great advantage over white lead that it contains no combined moisture and is not likely to produce blowholes, although it blackens in a heated mixture of sulphur and sulphur compounds even though some authorities claim that it does not do so.

Zinc oxide is one of the most valuable reinforcing pigments in the rubber industry and perhaps ranks higher than lithopone. It has a distinct hardening effect on rubber in time, but can be altogether regarded as a perfectly stable compound.

Lithopone is a mixture of zinc sulphide and barium sulphate and always contains a small percentage of zinc oxide. It is very largely used in the rubber industry to replace zinc oxide, although it is less of a reinforcing pigment. It has the unfortunate habit of turning gray when

* Extracts from an address before the Syracuse Section of the American Chemical Society printed in *The Journal of Industrial and Engineering Chemistry.*

exposed to sunlight, but it turns white again when allowed to remain in the dark for a considerable length of time.

Magnesium carbonate is a spreader or extender, and when pure has no bad effect on rubber. It is used largely for making rubber more filmy and gives somewhat the effect of satin to sheet rubber.

Ferric oxide red, which is a pure Fe_2O_3, is sold from a bright scarlet to a cherry color. When pure it has no effect on rubber, but when impure, containing a small amount of acid, it is deleterious.

Ferric oxide yellow is a hydrated oxide of iron and silicate of alumina, either natural or artificial. When absolutely dry and finely powdered it is very useful where a small percentage of rubber enters into the composition of the material made.

English vermilion is a sulphide of mercury largely used, and although its price is somewhat prohibitive in most articles, it is the only brilliant red color we have and is not injurious to rubber.

Graphite is a carbon, the purer forms consisting of 90 per cent carbon (graphitic) and 10 per cent silica and silicates. It cannot be regarded as a filler, for it improves rubber for mechanical uses, exerts no bad influence and lengthens its life.

I have not dwelt on the aniline dyes which are used, nor on the resinate and oleate colors, as this is really a separate subject. In a few words, however, I may say that the resinate aniline dyes have a decided use as a rubber coloring and are not as harmful as the oleate dyes. However, for toy balloon work and materials that are not supposed to last long, there is a decided use for some of the "lakes" in the so-called "cold-cure" method.

(C) *International Film Service.*
CAPT. WILLIAM DENAU DEMONSTRATING HIS ONE-POUND LIFE-SAVING JACKET FOR MILITARY USES

Lutes and Cements

A recent issue of the *Brass World* contains an interesting abstract from a paper, read before the American Institution of Chemical Engineers, dealing with lutes and cements for engineering and industrial purposes. Among the recipes given in this abstract, the following are of interest to rubber manufacturers.

Equal weights of rubber and boiled oil make a good acid-proof cement. The rubber is finely cut and dissolved in carbon disulphide in the proportion of 4 c.c. carbon disulphide to 1 gr. of cut-up rubber. Boiled linseed oil is then mixed in, and the mixing is facilitated by heating the oil. The solvent is not generally removed by evaporation until the paste is applied.

Another formula differs in having four times as much boiled linseed oil, together with fire clay or another filler, such as silex.

	Parts by weight.
Crude, finely cut rubber	1
Linseed oil, boiled	4
Fire clay (or other filler)	6

Melted sulphur, with fillers of stone powder cement, sand, etc., are sometimes used instead of fire clay.

The following is used for hydrochloride acid vapors:

	Parts by weight.
Rosin	1
Sulphur	1
Fire clay	2

Linseed oil (boiled) and fire clay stand most acid vapors.

According to Davis, red lead and litharge in boiled oil stand acid vapors (even nitric acid). He recommended mixing the linseed oil with the following ingredients:

	Pounds.
Litharge	80
Red lead	8
Flock asbestos	10

These materials are fed into a mixer, a little at a time, with 6 quarts of boiled linseed oil.

A standard lute of the marine glue class (which are applied to crevices, etc., hot, and get firm but brittle when cold) is composed as follows:

	Parts by weight.
Crude rubber	1
Shellac	2
Pitch	3

The rubber is first dissolved in carbon disulphide or turpentine before mixing with the heated (not superheated) mixture of the other two. The advent of blown petroleum residiums has made it possible to make up hard but flexible compounds without rubber. Grahamite is a good base to which fluxes, such as these just mentioned, or soft asphalts are added.

A good machinists' cement is made by addition of oil or gutta percha as follows:

	Parts by weight.
Linseed oil	6
Rubber or gutta percha	1

The rubber or gutta percha is dissolved in sufficient carbon disulphide to give it the consistency of molasses, mixed with the oil, and left exposed to the air for about 24 hours. The red lead is then mixed to a putty. Oxide of iron makes less brittle cements than red lead.

The following are given as good leather cements:

First, one kilo of finely shredded gutta percha, dijested over a water bath with 10 kilos of benzol until dissolved, and 12 kilos of boiled linseed oil varnish stirred in.

Second, seven and one-half kilos of finely shredded rubber completely dissolved in 10 kilos of carbon disulphide by treating while hot, one kilo of shellac and one kilo of turpentine are added, and the hot solution is heated until the two latter ingredients are also dissolved. Precautions against fire and vapors should be observed.

Still another leather cement is made up of the following melted together:

	Ounces.
Gutta percha	8
Pitch	1
Shellac	1
Olive oil	1

Under the head "Waterproof" the chief bituminous substances available are pitches, asphalts, gilsonite, and blown petroleum residues, mixtures of these substances and mixtures of the same with inert material.

Of the asphalts the preference was given to a substance like refined Bermudez, as it is nearly pure bitumen and forms homogeneous solutions with suitable solvents. A minor percentage of linseed oil or blown petroleum oil is useful sometimes for tempering or fluxing. For solvents heavy naphtha is generally used. It does not dissolve all the asphalt, such as the so-called asphaltene portion, but it thins out the asphalt well enough. Coal-tar naphtha is better but more costly. As voids are very apt to form in a painted asphalt coating, some form of filler is generally employed. The natural mineral filler of Trinidad asphalt may serve the purpose of such a filler.

Lutes of boiled linseed oil, thickened with clay, asbestos, red or white lead, are waterproof, if thick enough from the filler added.

Technical Course in Rubber Manufacture*

By H. E. Simmons, B.S., M.S.

Professor of Chemistry in the Municipal University of Akron

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SECTION IV

Central American Rubbers

When we refer to the rubber from Central America we generally include the territory where we find the Castilloas growing. This includes, therefore, not only Central America proper, but also Colombia, Ecuador and Venezuela, in fact, territory north of the Amazon including Mexico. In a previous article we mentioned certain rubbers from Ecuador and Colombia, but now we shall call attention simply to the rubber obtained from the Castilloas.

It was the Castilloa which furnished the rubber out of which the balls were made which the natives used in the game which Columbus and the early explorers found them playing.

This rubber tree found native in Central America and Mexico is called *Castilloa lactiflua,* in honor of Castillo, a Spanish botanist who died in 1793 while preparing the flora of Mexico. *Lactiflua* means flowing milk, distinguishing it from other trees when the milk exudes but does not flow freely. The tree generally is called *Castilloa elastica.* It is a significant fact that at one time there was more of Central America rubber used in the United States States than there was of Para. It does not possess the strength, tough ness or elasticity of Para.

TAPPING CASTILLOA

MEXICAN RUBBER GATHERER

The varieties of rubber from this region which are more or less familiar to the trade are Guayaquil sheet, coming from Ecuador and Colombia; there is also some Guayaquil and Carthagena strip, some in the form of sausage, and some designated as No. 1 and No. 2; their production is on the decrease at present.

A grade referred to as Mexico comes from Vera Cruz, Tabasco and Baraca. Guatemala furnishes a rubber bearing the same name. These rubbers are rather inferior in quality. It is thought that they are mixed up with cheap molasses, as some are very tacky.

Nicaragua sheets and several grades called West Indies, which never furnish any rubber, along with Nicaragua scrap, are familiar rubbers from this territory. The Nicaragua rubber is generally quite dry but rather dirty. The Greytown scrap is considered about the best rubber from this district.

To encourage the production of rubber from here the government of Nicaragua gives a premium of ten cents for every rubber tree planted where the number does not go below two hundred and fifty planted for each person. The trees must be planted sixteen feet apart.

Virgin or Virgen comes in the form of strip and sheet and slab. It is obtained from a different tree than the others mentioned above and is used to a great extent in the manufacture of hard rubber.

Guayule is a rubber from this section unique in its growth and production.

The above comprise the rubbers which we shall consider in this article. The better grades of Centrals shrink from 25 to 30 per cent. and the remainder from 30 to 40 per cent.

The method of obtaining the latex in use in Central America consists in puncturing rather than tapping in the sense we have referred to it before. It seems to be their practice to puncture the tree higher up than is the custom in the case of any other species we have considered.

COAGULATING WITH VINE JUICE

In order to coagulate the latex the native uses some very primitive means. For instance, he sometimes adds to the latex the juice of the "amole" vine. Often this is carried out in a hole in the ground. One pint of amole juice, which is alkaline in reaction, is added to one and a half gallons of latex. Where the same juice is used in a more modern way, after adding the juice

* This course commenced in the July 10, 1917, issue of THE RUBBER AGE, and will be complete in 27 issues.

the whole thing is heated to between 165 deg. and 175 deg. Fahr. By this method they are able to obtain sheet. The part which dries on the tree and peeled off is called scrap.

PREPARING RUBBER ON OJA BLANCA LEAVES
SPREADING LATEX ON LEAF — PRESSING OUT MOISTURE

The *Coyuntla* juice is an astringent in nature which will coagulate the rubber if the weed which contains it is used to whip the latex.

The natives in some places pour the milk from the tree onto mats, where it is allowed to dry or evaporate, then when the rubber is separated from the mat a sheet results. Several of these sheets are pressed together and are then ready for market.

Another method similar to the last consists in pouring the latex cut onto the long, palm-shaped leaves of the *Oja blanca* which they have dried in the sun.

When the leaves have a coating of about a quarter of an inch they are piled one above the other and pressed to remove moisture. The strips are then separated from the leaves, packed into slabs and are ready to be transported.

A very common method of coagulation in Central America is doubling the volume of the latex with water, then allowing it to stand. In a short time the rubber comes to the top in a creamy consistency. When homogenous enough it is removed, and in some localities is placed in the sun to dry, while in others it is run through between wooden rolls which press out the excess water. Then it is placed in the sun to dry it still further, taking about fifteen days. This rubber suffers a loss of as much as 50 per cent. It contains so much occluded water and uncoagulated latex.

All of these rubbers as prepared by the natives are not of the quality which they might be if more care was exercised in their production.

PREPARING RUBBER ON OJA BLANCA LEAVES
REMOVING RUBBER SHEET — THE FINISHED SHEET

The Castilloa is now producing rubber on a plantation scale at different places. To get an idea of these plantations, we shall describe the industry as we find it in operation by the La Zacualpa Rubber Plantation Co.

The development of the industry in Mexico is told in a little book, "Rubber, What It Is and How It Grows," published by the above company. In describing this rubber business we shall therefore use extracts from this work.

The lands in Mexico suitable for the production of this rubber are located in the states of Vera Cruz, Tabasco, and Chiapas, for the elevation above sea level should not exceed five hundred feet. The low lands along the coast are the best, where the soil has a great depth formed by the deposits left by the overflowing rivers.

Land for a plantation is generally selected which has a virgin forest rather than land which has been under cultivation. It must be capable of perfect drainage and yet protected from overflowing rivers. In the above mentioned plantation there are over ten thousand acres of trees, averaging about four hundred trees to the acre. These trees attain a height of from forty to fifty feet and a diameter of about twenty inches.

The Castilloa begins to blossom when it is between five and six years old. Before blooming it sheds all of its leaves, this taking place between January and April. When the seed is ripened the tree puts forth new leaves.

The planting of these trees is very

interesting. The land is first surveyed into tracts of thirty-three acres, including avenues and streets; the roads running north and south are called avenues and are named, while the ones running east and west are called streets and are numbered.

The land is cleared by cutting down the forest, and ts then burnt over. It is then staked out to allow four hundred trees to the acre, and at each stake a mound of earth is made and the rubber seed planted, which germinates in from eight to fifteen days and grows quite rapidly.

After planting a great amount of work is required to keep the natural vegetation from choking out these tender trees. After about two years the tree requires very little attention. The tapping begins when the tree is between five and six years old.

The old method consisted in making a V-shaped incision in the tree and placing a leaf under this to serve as a funnel and conduct the milk into a hole in the ground made at the foot of the tree. This hole was lined with green leaves. In a short time the latex coagulates on the edges of the incision and stops the flow. This is removed as often as necessary until the milk ceases to run.

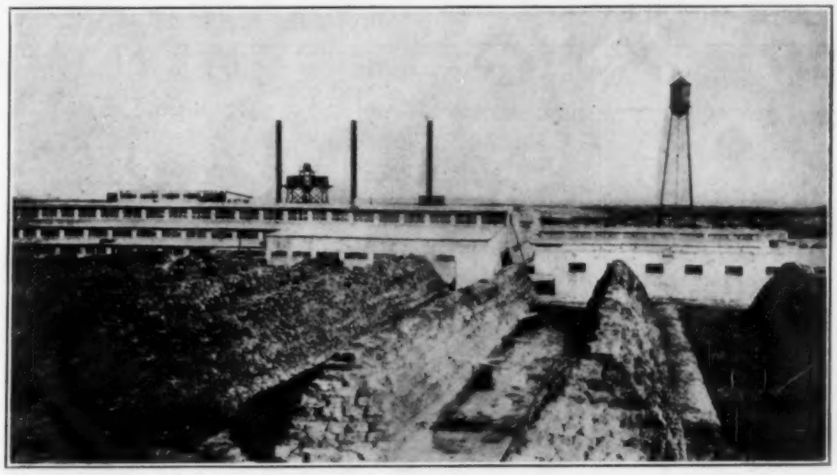
To tap twelve trees and obtain their full quota of latex is regarded as a day's work for one laborer. When the flow has stopped the tapper carefully removes the leaves containing the latex from the hole and pours it into his gathering receptacle. It is a very wasteful method at best. When some of these trees are first tapped the milk will spurt out some distance, just as though it was under some pressure in the tree.

The new method of tapping we shall take from the book referred to above.

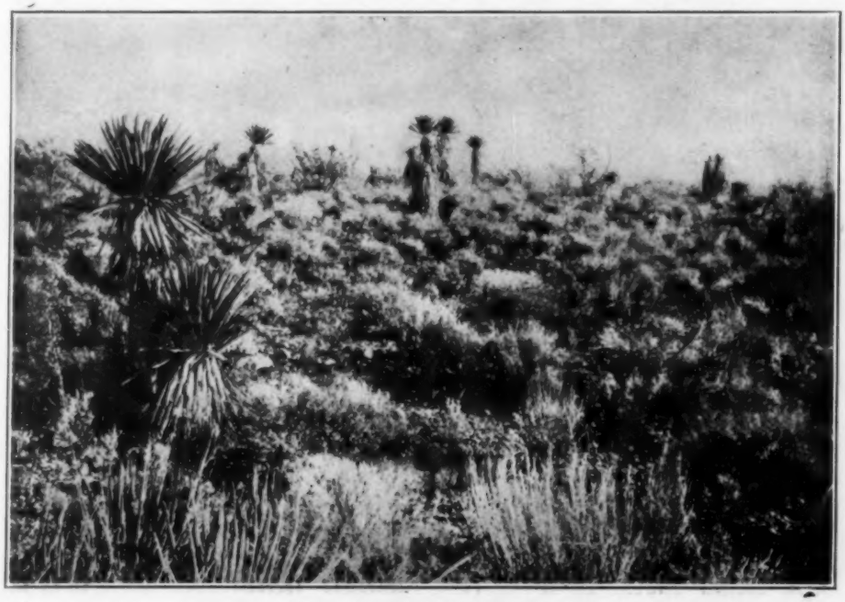
"The hulero, or rubber gatherer, is supplied with a tool invented and perfected on La Zacualpa Plantation, consisting of a stout handle, twelve inches long, at one end of which a U-shaped sheet of steel is fastened; just forward of this U, the curved portion of which is sharpened to a keen edge, a metal finger is depressed more or less as desired by an adjustable screw which runs through the handle; and the 'set' or 'adjustment' of this finger, which slides over the surface of the bark as the tool is drawn across the tree, determines the depth of the cut made by the U-shaped knife which follows immediately behind the metal finger.

"A deeper or shallower cut may be made according to the size of the tree which we are tapping and the thickness of the bark; and we can effectually guard against cutting through the bark and into the wood of the tree. The latex, or rubber-producing milk, flows in veins in the bark only, and is entirely distinct from the life sap of the tree which flows between the bark and the wood. It is impossible to avoid cutting into the wood when the machete is used, and it is from the machete's too deep cutting that injury to the tree results.

"With our perfected tapping tool a smooth continuous channel is cut across the tree's trunk and a canal is made which cannot fail to conduct the latex to a receptacle placed to receive it; while the succession of hackings made by the machete are often out of line and much of the latex flowing along the cuts leaves the line of travel and is lost."



A Guayule Extracting Factory



Dense Growth of Guayule

The method of treating the latex on the plantation is quite different from the wasteful and dirty ways of the natives. The exact process of coagulation is kept secret, but after it is coagulated the rubber is washed through a modern washer, sheeted and hung up to dry, then by means of a hydraulic press these sheets are made into solid blocks of about twenty-five pounds each, when the process is complete.

In Mexico is found a shrub which produces rubber and is not known to grow in any other locality. A careful study of this plant has been made by Francis Ernest Lloyd, Professor of Plant Physiology, Alabama Polytechnic Institute, and from his account we get a good idea of this particular rubber. It bears the name Guayule (*Parthenium argentatum*) and flourishes on the Chihuahuan Desert.

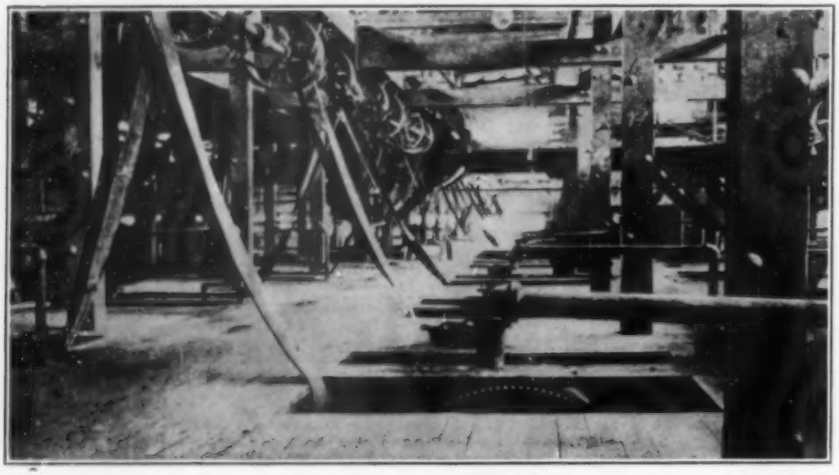
It was discovered by J. M. Bigelow in 1852, while attached to the Mexican Boundary Survey, and it was first described by Prof. Asa Gray some years later. It is said that this rubber was first obtained by the natives by chewing the bark and then collecting the rubber together in a ball.

This method of getting the rubber dates back a great many years. To substantiate this belief Professor R. H. Forbes furnished the following information:

"The lump of rubber, a portion of which I recently handed you, was found in December (or thereabouts), 1909, at the

west end of the Santa Cruz Reservoir and Land Company's dam, 14 miles west of Sasco, Ariz. C. O. Austin, who was present, states that this ball of rubber was contained in a small *olla* with articles of stone belonging to the older prehistoric ruins of the country.

"The find was made at about three feet below the general surface which was formed by the off-wash of an adjacent low mountain. No traces of houses on the present level of the land, according to Mr. Austin, were visible. One other ball of rubber was found here, and is now in Col. W. C. Greene's collection at Cananea. I regard this find as genuine, as Mr. Austin is familiar with Salt River Valley ruins and his statements are confirmed by others."



UPPER FLOOR IN GUAYULE FACTORY

Because of the resinous content of this plant it burns rapidly, and large quantities of it have been used in Mexico as fuel in smelting.

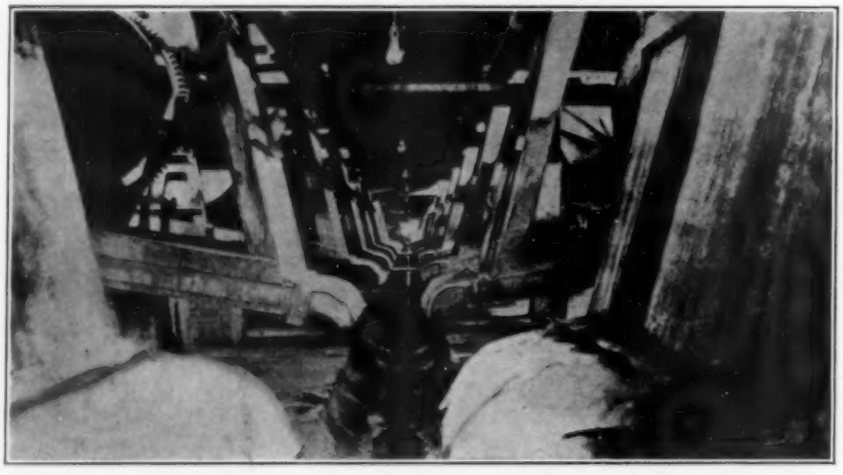
About the first move to utilize this rubber was in 1888, when a company sent an agent into Mexico with instructions to obtain some of this "rubber bark." He carried out his orders carefully and had shipped to New York 100,000 lb. of the entire shrub. The freight on this large amount of wood so discouraged this company that further efforts with this rubber were not undertaken immediately.

In 1902 a factory was built at Jimulco for the extraction of this rubber. A little later a large factory was built at Torreon by the Continental-Mexican Rubber Co. Since this several large factories have been built for this rubber out of the shrub.

The methods used for extraction of this rubber are interesting, for they are different from any mentioned thus far; something like it was outlined in connection with the Landolphias, however.

The methods differ because the rubber which the plant contains cannot be removed by bleeding, for it exists as rubber in the cells of the plant itself. Thus there are two general methods which have been and are being used. The first consists in dissolving the rubber by means of chemicals after it has been subjected to preliminary grinding.

The other method agglomerates the rubber mechanically after it has gone through the preliminary grinding. The former way has just about been abandoned, as it is impossible for it to compete with the latter. The process consists in extracting the rubber from the ground shrub by means of naphtha. The resulting solution is then partly distilled when alkali is added. This holds the resins in solution and the rubber separates out.



TROUGHS TO COLLECT EXTRACT FROM PLANTS

In the other method the shrub is pulled up root and all and brought to the store houses for a short period of seasoning, as it seems to work better after such treatment. In the more improved culture instead of pulling it is cut off at the ground, and this allows it to send up sprouts, which in time will produce rubber.

From the store houses it is taken and washed to remove dust and sand which would adhere to the rubber and increase its specific gravity. It is then passed between corrugated rolls, running differentially, which cut the shrub and grind it at the same time.

The mass is then passed into a pebble mill, the charge generally consisting of one-third its volume of pebbles, one-half of water, and from six to eight bushels of shrub. The mill rotates at the rate of thirty revolutions to the minute for from ninety minutes to two hours, when there results a fine pulp mixed with little particles of rubber.

This is separated as well as possible from the dirty water which it contains and then transferred to settling tanks. The rubber then comes to the top and is removed by skimming, thus separating it from most of the fiber, which water-logs and sinks. To clean the rubber still further it is often put through a beater-washer and scrubbed here for some time, when it then goes between corrugated rolls again and then between smooth ones, which sheet it and make it ready for the market. This rubber contains about 25 per cent. of moisture.

In some places they take this rubber just as they remove it from the settling tanks and boil it with a 1 or 2 per cent. solution of caustic soda, which will separate the rubber more completely from the fiber, and will also reduce the per cent. of resin which normally runs about 25 per cent. The resin has also been removed by extracting the Guayule with hot acetone.

According to Weber, the Centrals suffer the following commercial losses:

	Per cent.
Guayaquil (sheet)	20 to 30
Guayaquil, Carthagena (strip)	20 to 30
Mexico	12 to 15
Guatemala	25 to 35
Nicaragua (sheet)	10 to 15
Nicaragua (scrap)	10 to 15
Virgin sheets	12 to 15
Guayule	30

PRESIDENT
LESTER D. GARDNER

THE RUBBER AGE AND TIRE NEWS

EDITOR
HERBERT M. WILLIAMS

Vol. I | August 25, 1917 | No. 11

COMMENCING with this issue, THE RUBBER AGE will give an added service to the rubber industry by including a special section devoted to tires; their manufacturing and merchandising. In order to emphasize this department, the name has been made THE RUBBER AGE AND TIRE NEWS.

THE RUBBER AGE has secured an enviable position in the rubber field. It has more subscribers than any rubber paper has ever secured and it is now printing more copies than any other American rubber publication. But it is not content to be acceptable to its readers only. It intends to widen its field and become increasingly useful to the largest branch of the rubber industry. The importance of the tire to the rubber manufacturer cannot be over-emphasized. About sixty per cent of the rubber used in this country goes into tires. With the great demand of our allies for solid tires supplemented by their enormous use by the Government, the rubber industry will probably look more and more to tire production to continue its great prosperity during the war.

The automobile papers which have derived so much of their success from the rubber industry have given much general tire information in which the public is interested but have not been able to give tire manufacturers as direct trade aid as can a publication devoted exclusively to rubber.

Price fluctuations and market conditions of tire ingredients and fabrics make news of prime importance to the tire distributor and dealer. This information is of such a character that properly handled, it can be used by the tire dealer and distributor in explaining the altered conditions which require the establishment of higher levels of prices. So many tire distributors and dealers have become subscribers to the RUBBER AGE that it is evident that they wish to learn more about rubber and its uses. To give this trade a reliable and helpful publication will be of direct assistance to every tire manufacturer in the industry.

There will be no change in the established policy of THE RUBBER AGE to give the rubber industry the best general rubber articles and news, quickly and accurately. The tire section of each issue is *additional* news of such importance that it will be more helpful by being grouped together.

The policy of using excellent paper, clear printing and interesting make-up will be continued even with the large increase in costs. No expense is to be spared to give the rubber industry a modern trade paper of both physical and editorial excellence. This policy has brought success to THE RUBBER AGE and will, it is hoped, make the entire rubber field appreciate that THE RUBBER AGE AND TIRE NEWS is rendering a service which makes for progress and expansion of the industry.

The Transportation Problem

Transportation at the present time offers one of the most serious problems that have to be met. Both the Government and the industries are vitally dependent upon ample transportation facilities. In a careful analysis that has been prepared by Raymond B. Price, who is now devoting all of his energies to aiding the Government, it is brought out that coal shortage is reduced 20 per cent by lack of cars and four and a half per cent by needed labor.

With winter approaching and with war work hardly started, it is pointed out that it is full time the situation be viewed with full seriousness and that plans be made for the future, when even greater demands will be made on transportation.

The greatest hindrance to defeating Germany lies in the shortage of ships, and a year from now the situation promises to be worse. Internal transportation must also be expanded, including waterways, railroads, electric railroads and motor truck lines. Coastwise and lake traffic is large and vitally important; but the development of river and canal traffic has been left to railroad men, who often have sacrificed profit for growth with its additional facilities at increasing cost. Louis A. Brandeis estimates that three years ago the railroads east of the Mississippi and north of the Potomac and the Ohio had a capital investment of $5 to $5.50 for every dollar of gross annual income—a handicap which no manufacturing business, short of actual monopoly, could long endure.

In the West, trolley cars carry both freight and express. This method of transportation would likely be in more general use had railroad leaders been friendly to the idea.

When grain and ore can be carried by water at one-eighth the cost of rail, economy will decide the route. Electric power will be developed at the mine mouth, relieving the railroads of the vast coal tonnage, once desired but destined to be unwelcome tonnage.

River, lake and canal transportation will have to be properly expanded. Sectional political influence must cease to be a factor in deciding transportation needs.

Great possibilities lie in the extension of motor truck transportation. France has already successfully organized such a service for hauling coal and other commodities to overcome traffic congestion. Verdun, after her railroad connections had been destroyed, was saved by a fleet of 4,000 motor trucks running night and day. Between the trucks, only a few feet apart, an army of road menders shoveled and scraped to keep the road serviceable. Such spirit in America would solve most congestion problems as fast as they appear.

Notes of Interest to the Rubber Industry

Williams Foundry and Machine Co. Is Sold, J. K. Williams Retiring—Plymouth Rubber Under New Control—The Dunbar-Daggett Co. Formed—M. L. Cramer Leaves Michelin

Williams Foundry and Machine Co. Sold

By Telegraph from Akron Correspondent.

The Williams Foundry & Machine Co., one of the most prominent manufacturers of rubber machinery in the country, has been sold and J. K. Williams, its president, will retire from the business. Rumor states that $3,000,000 is the price that has been paid by the purchasers whose names are not yet announced.

Mr. Williams denies the report that the Goodrich interests have been the buyers or that any machinery manufacturer in the Akron district has been the purchaser. He says that the company was bought by out of town buyers. It is understood that active management of the business will be placed in the hands of F. E. Holcomb, general manager.

When Dr. B. F. Goodrich wanted some molds made for bicycle tires many years ago he visited J. K. Williams, a young machinist, who was running a little repair shop in Akron. That was the beginning of the J. K. Williams Foundry & Machine Co. For many years, following the introduction of the automobile, the only tire molds made in Akron were furnished by the Williams company.

M. L. Cramer Resigns Position

Martin L. Cramer, who has been connected with the Michelin Tire Co., Millstown, N. J., for the last ten years, has resigned his position as purchasing agent of the company to accept an offer to act as director of purchases of the American Writing Paper Co., Holyoke, Mass. Mr. Cramer will assume his new duties September 1.

Clapp Increases Capital

The authorized capital of the E. H. Clapp Rubber Co., Boston, Mass., has been increased from $275,000 to $400,000 (4,000 common shares). The new stock is to be paid for in cash.

The Dunbar-Daggett Co.

J. Frank Dunbar, Harold A. Daggett, and J. Frank Dunbar, Jr., have organized for business as crude rubber brokers under the firm name Dunbar-Daggett Co., Inc. The corporation has two offices, the one located at 82 Beaver Street, New York, and the other at 201 Devonshire Street, Boston, Mass.

Plymouth Rubber Under New Control

Changes in the officers and directors of the Plymouth Rubber Co., Canton, Mass., were made at a recent meeting of stockholders and directors that involved a transfer of control of the common stock. James J. Clifford was elected president, Charles W. McDermott vice-president, and J. E. Stone secretary. The foregoing and A. D. Sydeman, J. C. Haarts, W. G. Thomas and Marshal Cutting were elected directors.

Mr. Clifford, the new president, was connected with the United States Rubber Co., Naugatuck, Conn., for over two years and with the Boston Woven Hose & Rubber Co. for the past nine years. Another new member of the Plymouth organization is W. E. Kavenagh, for sixteen years with the Goodyear Tire & Rubber Co. of Akron. Mr. Kavenagh will be factory manager of the Plymouth Co. The Plymouth Rubber Co. is reported to have done a gross business of approximately $3,000,000 last year.

Lowenthal Co. Opens Akron Branch

The Lowenthal Co., dealer in rubber and metal, 23 Heyward street, Brooklyn, N. Y.,

H. C. Jones

recently opened a branch office in the Delaware Building, Akron, O., to take care of their business in the rubber metropolis. H. C. Jones, formerly of the salvage department of The B. F. Goodrich Co., Akron, O., is the manager of the new office.

G. F. Johnston Joins Aviation Corps

G. F. Johnston, son of William A. Johnston, president of the Rubber Products Co., Barberton, Ohio, has been promoted and transferred from the officers' training camp to the American training school of the Royal Flying Corps, at Long Beach, Ontario, Canada.

P. H. Lyon Makes a Trip to the East

P. H. Lyon, senior member of the firm of Chanslor & Lyon, San Francisco, Cal., Pacific Coast jobber and supply house, is now in the East. His company has the Coast distribution of Lee tires, and he made the last part of the trip from Chicago to the Lee factory in Conshohocken, Pa., under the guidance of Harry E. Field, general sales manager of the Lee Tire & Rubber Co.

Sterling Changes

J. White, formerly manager of the Cleveland, O., sales branch, is now manager of the Brooklyn, N. Y., branch.

S. Cade has been appointed manager of the Cleveland, O., branch.

C. Walters, former assistant manager in Paterson, N. J., has been appointed manager of the Jersey City, N. J., branch and is to take the place of Ellis Northrop. R. Oliver succeeds Walters.

D. W. Allen, formerly salesman of the Rochester, N. Y., branch, is now manager of that branch.

Michigan to Build

Michigan Tire & Rubber Co., Coldwater, Mich., will build a two-story 60 by 300 ft. factory, and also one of 60 by 60 ft. A total expenditure of about $60,000 is involved.

A Valuable Booklet for Tire Users

"Maximum Mileage," a new booklet, issued by the Goodyear Tire & Rubber Co., Akron, Ohio, should prove valuable to all users of tires, most of whom spend many dollars for tire mileage they do not get.

Application of the methods advocated in the Goodyear booklet would eliminate much of this waste.

The message of the booklet deals with the tire, the road, proper loading, inflation pressures, wheel alignment, changing of tires, the various items of proper tire care, and the use of tire savers.

Among the valuable suggestions that every motorist might capitalize are the testing of air pressures to insure service, the avoiding of bumps which cause breaks of the inside of the tire where its presence is unknown until the announcement comes in the shape of a blow-out, the proper use of chains, the right way to carry tubes, the proper application of brakes and many other important considerations.

A Suggestion for Tire Repairers

"If I owned a tire shop," writes a correspondent of a contemporary, "I would ask my patrons to keep and bring in all tacks, nails and various snags that they found in their tires. I would also make a collection of similar objects rescued from tires left to be repaired, and when I had accumulated enough for a display, I would arrange them neatly as a 'Chamber of Horrors' in my show windows.

"I would label each object with suitable description, mention probably the name of the car owner and any other facts likely to cause interest. After this museum of tire hazards had grown to the point where car owners would bring their friends to see it, I would place in the same window the notice that, however serious the injury, I had the facilities for rendering prompt and first-class repair service. A display of this kind would cause my tire shop to be remembered by passers-by and I would be likely to secure their patronage."

Hood Rubber Business

The business of the Hood Rubber Co. this year has justified the putting of more capital into the enterprise. It has been arranged to issue $1,250,000 additional preferred and $500,000 common stock, a total of $1,750,000. The cash proceeds to the company of substantially this amount will all be utilized for additional working capital.

In 1916 Hood Rubber Co. did a gross business of $11,666,000, against $9,173,000 in 1915. In the first half of 1917 gross sales increased $3,200,000, or at the rate of $6,400,000 per annum, a gain of over 50 per cent. The concern expects that the gross business for 1917 will exceed $16,000,000.

A banking syndicate will shortly offer the new Hood stocks for investment. The preferred will be offered to investors at 102. The common stock has been paying 6 per cent regular dividends with extras, says the company. This year the stock is expected to pay monthly dividends of 1 per cent through the balance of the year, and on Jan. 1 next is expected to go on a regular 10 per cent dividend basis.

Hood Rubber production, it is claimed, has now reached 76,000 pairs of boots and shoes daily and 700 automobile casings, besides 800 inner tubes. The company employs 7500 people.

Amazon Declares Dividend

A dividend of 3½ per cent. has been declared on the preferred capital stock of the Amazon Rubber Co., Akron, Ohio.

Activities of the Rubber Association

General Meeting of Mechanical Rubber Goods Manufacturers' Division Held—Vice Chairman J. J. Voorhees Calls Meeting to Order—Full Report of the Conference

MECHANICAL GOODS DIVISION

A general meeting of the Mechanical Rubber Goods Manufacturers' Division of the Rubber Association of America was held at the headquarters of the Association on August 15. Those present were:

Acme Rubber Manufacturing Co., represented by J. A. Lambert.
Boston Belting Co., represented by W. E. Hardy and W. E. Greene.
Cincinnati Rubber Manufacturing Co., represented by S. D. Baldwin.
Continental Rubber Works, represented by W. A. Darling.
Dunlop Tire & Rubber Goods Co., Ltd., represented by D. E. Beynon.
Electric Hose & Rubber Co., represented by C. D. Garretson.
Empire Rubber & Tire Co., represented by A. Boyd Cornell.
Essex Rubber Company, represented by C. H. Oakley.
Fabric Fire Hose Co., represented by W. T. Cole.
The B. F. Goodrich Co., represented by H. J. Morehead and W. A. Whitenack.
Goodyear Tire & Rubber Co., represented by I. R. Bailey and E. H. Barnwell.
Hamilton Rubber Mfg. Co., represented by W. L. Blodgett.
Hewitt Rubber Co., represented by J. H. Kelly.
New Jersey Car Spring & Rubber Co., represented by George E. Jeandhour.
New York Belting & Packing Co., represented by J. H. Cobb.
Quaker City Rubber Co., represented by F. W. Daniel.
Republic Rubber Co., represented by Guy E. Norwood and C. W. Hardin.
Thermoid Rubber Co., represented by Robert J. Stokes.
United & Globe Rubber Mfg. Cos., represented by J. S. Broughton.
Voorhees Rubber Mfg. Co., represented by John J. Voorhees.
Whitehead Brothers Rubber Co., represented by Alfred Whitehead.

The meeting was called to order by Vice-Chairman J. J. Voorhees, in the temporary absence of Chairman William T. Cole. The principal object of the meeting was to consider the seriousness of the cotton duck situation in its relation to the manufacturers of rubber goods. Two communications from the Cotton Goods Committee of the Council of National Defense were read, as follows:

"July 19, 1917.

"The unusual requirements of the Government for tentage and other heavy ducks has necessitated the utilization of looms not ordinarily employed on these fabrics to the extent that much of commercial business has of necessity been curtailed and many looms adapted to hose ducks have been put on numbered ducks and tent ducks. Realizing the vital necessity of railroad supplies particularly of air brake hose, steam and signal hose which is essential to the proper maintenance of the railroad equipment, and that unless accurate figures were secured of the supplies now available of these several fabrics, and the quantity likely to be required during the next year that it might be possible that by employing machinery usually engaged on these fabrics on other work that when they were needed machinery would not be available to supply the demand.

"We have, therefore, to request that you furnish us with as nearly accurate figures as is possible of the present visible supply of air brake, steam and signal hose ducks in the possession of the various rubber manufacturers as well as the stock of these made up articles in the possession of various supply houses that we may report to the Council of National Defense at Washington the available supply as well as the probable requirements for the next year in order that proper provision may be made with the cotton goods manufacturers for taking care of these requirements"

"August 4, 1917.

"We acknowledge receipt of your favor of August 2 which was taken up and discussed at the Committee meeting of yesterday. The sense of the Committee was that it would be ill-advised to send our inquiries direct to the trade in general. Have to advise that you secure by best means possible through your Committee the information desired on steam, air brake and signal hose ducks. We would also request that you ascertain as soon as possible the quantities of stocks of 30 and 32 oz. belt duck in 42 in. and 50 in. widths."

A general discussion of the duck situation followed, and every member present gave his views on the question. From the remarks it was evident that a number of firms represented had orders and contracts for manufactured goods running well into next year and in some instances they had contracted for a supply of cotton duck, yarn, etc., to meet their requirements. There seemed to be a general feeling, however, that the requirements of the Government would make it impossible for the cotton manufacturers to deliver to the rubber trade all the materials called for.

The question of preparing figures showing the amount of unfinished and finished stock on hand and an estimate of the amount of cotton goods necessary to meet the demands for the coming year was also thoroughly considered at the meeting, and it seemed to be the general opinion of those present that before this was done the members of the Division should have a clearer understanding of the cotton fabric situation and more definite information as to the possible requirements of the Government under the present unusual conditions. All expressed their perfect willingness, however, to give the committee or representatives of the Government any information they might desire, including the amount of stock on hand, etc., if called upon to do so.

From the discussion it was evident that there was a general feeling that a committee to represent the members of the Division should be named to investigate the present situation and secure all data possible, as to present and possible future conditions, for the information of the members of the Division, so that intelligent action could be taken.

The Chairman suggested that the proposed committee be made a permanent committee to handle matters of this kind, and stated that it was his opinion the cotton situation was at all times of sufficient importance to require a special committee to treat with any situation which might arise.

It was unanimously voted to appoint a committee of seven to confer with the cotton duck, yarn and other manufacturers of cotton fabrics and to investigate the entire situation, seeking any necessary information at Washington, and reporting its findings to the members of the Division as promptly as possible.

The Chairman appointed Messrs. Cobb and Bailey as a committee to submit a list of nominations for the proposed committee. The following firm members were nominated and unanimously elected, their representatives to be designated by the companies named:

Rubber Goods Manufacturing Co.
Goodyear Tire & Rubber Co.
The B. F. Goodrich Co.
Fabric Fire Hose Co.
Boston Woven Hose & Rubber Co.
United & Globe Rubber Mfg. Co.
Republic Rubber Co.

During the discussion Mr. Beynon of the Dunlop Tire & Rubber Goods Co., Ltd., stated that he was particularly interested in whatever action was taken by the Division and also what the attitude of the United States Government might be in the matter, as he thought it very likely that the Canadian Government would take action along the same lines.

Mr. Voorhees, vice chairman, stated that at least 20 per cent of the available looms for cotton goods had been taken over for Government work exclusively, and that this percentage would undoubtedly be increased to fully 50 per cent within a year.

By special invitation J. Spencer Turner, chairman, and O. S. Green, secretary, of the Committee on Cotton Goods of the Council of National Defense, were present to explain the difficulties encountered by the cotton goods people.

Mr. Turner stated that he thought if the manufacturers of rubber goods could obtain from the Government some definite expression as to its requirements for the coming year, it would facilitate the solution of the present day problems; on the other hand it should be brought to the attention of the Government that there were certain lines of goods, such as air brake hose, steam hose, etc., which were being delivered to the railroads and were of such vital necessity as to be classed as war material.

Mr. Turner also referred to the fact that while the manufacturers throughout the country must make every effort to meet the Government demands, at the same time their regular domestic trade should receive some consideration and it would seem that a thorough understanding of the interests of all parties concerned should be given just and fair consideration.

In response to a question, Mr. Turner assured those present that a large percentage of the facilities of duck manufacturers throughout the country had of necessity been given up to Government work and he seemed to think that cooperation on the part of the manufacturers of rubber goods with the duck manufacturers was the best solution of present difficulties. He stated he was sure the cotton duck people would be very willing to confer with representatives of the rubber goods trade at all times to adjust the distribution of cotton goods as much as they possibly could.

It was voted that meetings of the Division be held on the second Tuesday of each month.

It was voted that a committee of three be appointed to suggest topics to be brought up and discussed at each meeting, and that the various matters to be considered be announced in the call for such meetings sent to the members of the Division a week in advance of the meetings.

The following members were named as members of the committee: A. Boyd Cornell, chairman; J. J. Voorhees, Sr. and George A. Wies.

In reference to the legal action brought against the Voorhees Rubber Manufacturing Co. by the Universal Road Machinery Co. on account of a coupling blowing off in an emergency, the Chairman stated that the suit was still pending. In the allegation set up by the plaintiff $4500 was claimed on account of a defective coupling and the fire insurance companies became parties to the suit. He also stated that Attorney Neave had reported that when the case came to trial a jury might award damages.

Mr. Cole explained that he had endeavored to get the attorney to find a legal error rather than accept a jury decision, for if the manufacturers, under the circumstances, have to depend upon a jury, they would seem to be in a serious position because not only couplings but other goods such as packing, etc., might give way for

some reason or other, thereby causing them to be liable for damages. Mr. Cole said that the plaintiff claimed that the coupling which blew off was defective, but that this might not always be the case as such an occurrence could be due to one of several failures. As the law stands now it is simply up to the jury to award the amount of damages.

The Chairman made the suggestion that Mr. Neave be invited to be present at the next meeting of the Division. He stated that no expense had been incurred on the part of the Division except a retaining fee of $500, which was paid Mr. Neave when it was voted to assist in the defense of the suit brought against the Voorhees Rubber Manufacturing Co. As the matter was of vital importance to the members of the Division some action should be taken relative to continuing this suit in behalf of the Voorhees Rubber Mfg. Co.

"The insurance companies," he said, "are establishing a precedent in order to put the screws on harder than ever. The circumstances might apply in the same way in connection with a fire department where the damages amount to $1,000,000."

SUNDRIES MANUFACTURERS' DIVISION

After a number of conferences extending over a period of several weeks, a decision has been reached in the question of elimination and standardization of certain druggists' sundries. The Rubber Sundries Manufacturers' Division of the Rubber Association has adopted the standards listed below.

These standards have also been approved by the American Trade Association and the Wholesale Surgical Trade Association.

Catheters—(French Scale).—Sizes Nos. 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27 and 28.

Colon and Rectal Tubes — (French Scale).—Sizes Nos. 22, 28, 30 and 32. Open end: one eye—extra charge for two eyes. French scale to be considered standard, but mark with any other gauge desired without extra charge.

Stomach Tubes—(French Scale). — Sizes Nos. 22, 28, 30 and 32. Length, five feet. Mark with French guage only. Open end: one eye—extra charge for two.

Invalid Rings—Standard sizes Nos. 4-12, 6-14, 8-16, 10-18 and 12-20-in. Diameter. Color left to the option of individual manufacturers.

Politzer Bags.—Standard sizes, 6, 8 and 10-ounce. Other sizes special.

Pessaries—German Ring.—Use only numbers which indicate millimetre sizes agreeing with No. 50 approximately 2 in., No. 55 approximately 2¼ in., No. 60 approximately 2⅜ in., No. 65 approximately 2½ in., No. 70 approximately 2¾ in., No. 75 approximately 3 in., No. 80 approximately 3¼ in. and No. 85 about 3½ in.

Inflated Pessaries—Red Only—(Made in White Special).—Sizes Nos. 1, 2, 3, 4 and 5.

Pure Gum and Red Drainage Tubes.—Sizes ⅛ x 3-64 in., 5-32 x 3-64 in., 3-16 x 1-16 in., ¼ x 1-16 in., ¼ x 3-32 in., 5-16 x 3-32 in., ⅜ x 3-32 in. and ½ x ⅛ in.

Rubber Bandages.—2 in. x 6 ft., 2 in. x 9 ft., 2 in. x 12 ft., 2½ in. x 6 ft., 2½ in. x 9 ft., 2½ in. x 12 ft., 3 in. x 9 ft., 3 in. x 12 ft. and 3 in. x 15 ft. Weight optional with individual manufacturers.

Instantaneous tourniquets.—Standard length 24 in.

The next general meeting of the Rubber Sundries Manufacturers' Division has been called for September 7.

PROOFERS' DIVISION TO MEET

The Rubber Proofers' Division of the Rubber Association will meet on September 11 at the headquarters of the Association, 17 Battery Place, New York.

Industrial Scholarships at Akron

Firestone Tire & Rubber Co., the Goodyear Tire & Rubber Co., and the Miller Rubber Co. to Educate Thirty-five Men at Municipal University on Co-operative Plan

Foresighted and progressive, the Firestone Tire & Rubber Co., the Goodyear Tire & Rubber Co. and the Miller Rubber Co. of Akron, Ohio, have established thirty-five industrial scholarships in the Municipal University of Akron for the purpose of training men in manufacturing production.

Students accepted for these scholarships will be taken from the upper third of their high school classes, and the selection must be approved by the firm awarding the scholarship.

PARKE R. KOLBE,
President of the Municipal University of Akron.

The object of the companies in offering this inducement is to attract a few of the most desirable high school graduates each year and train these men in the practical work of their own organization while the university is giving them a broad college training.

By a cooperative system of education, similar to the one first established by Dean Herman Schneider at the University of Cincinnati in 1906, the accepted student will work in the factory for two weeks and will then be succeeded by a fellow-student while he goes to the university. They will alternate thus for the length of the school term, four years of eleven months each. University fees and tuition will be paid by the company employing the student and a salary of $75 a month will be given for the work in the factory.

A candidate must have a high school education, be recommended by his principal, and be capable and willing of performing hard manual labor. He must also spend the summer preceding his college entrance in a position provided by the university. Having been in continuous employment of the company giving him his education, he will at the completion of his school work be given a permanent position in that concern, on which he must stay at least one year.

The student has his choice of five courses: mechanical, civil and electrical engineering, business training and manufacturing production.

Dean Fred C. Ayer, of the Municipal University of Akron, under whose personal supervision the cooperative parts of education was introduced into the Rubber City, is deeply interested in this effort of the rubber companies to educate their employes at college and at the same time make them self-supporting while acquiring this training.

The first student to apply started work in the machine shop of the Firestone Tire & Rubber Co. on June 15, 1914. He holds the distinction of being the first to apply, the first to start his shop work and the first to report at the University on the morning of registration.

Victor Wire Wheel Co. Leases Factory

Victor Wire Wheel Co. has leased the plant formerly occupied by the Gibson Mfg. Co., Kalamazoo, Mich., to be used for manufacturing wire wheels until the company can erect its own factory.

Charles A. Gilbert Is Sales Manager

Charles A. Gilbert has been appointed general sales manager of the Carlisle Cord Tire Co., New York. Mr. Gilbert was formerly western district sales manager for the United States Tire Co.

"The Eighteenth Year Book"

The eighteenth year book of the Rubber Association of America, Inc., has just been issued. The book contains such matters of interest to the rubber trade as the lists of officers, standing and special committees, and members of the association, the reports of seven divisions, and the proceedings of the annual meeting held in January.

Reports incorporated into the volume include those of H. Stuart Hotchkiss, chairman of the Committee on Uniform Crude Rubber Contract and Nomenclature; Raymond B. Price, chairman of the Committee on Preparedness; Frederic C. Hood, chairman of the Legislative Committee; and Homer E. Sawyer, chairman of the Nominating Committee.

The book closes with a report of the last annual banquet of the association, and contains the addresses of Harvey S. Firestone, the Hon. William Howard Taft, Col. Samuel P. Colt, Samuel McRoberts, and the Rt. Rev. Frank DuMoulin.

Empire to Double Capacity

The Empire Tire & Rubber Co., Trenton, N. J., contemplates doubling the capacity of its plant.

Walter H. Bass Marries

Walter H. Bass, of Gove & French, crude rubber dealers in Akron, Ohio, was married recently to Miss Katherine Fiery, a daughter of the president of the Star Rubber Co. and a niece of F. A. Sieberling. Mr. Bass has been prominent in Western rubber circles since his graduation from Princeton.

Rubber Imports in United Kingdom

Rubber manufactures will now be admitted into Great Britain to the extent of 15 per cent of the amounts imported in 1916, according to a cablegram from the American Consulate-General in London. Applications should be made to the Department of Import Restrictions, London. It will be remembered that the importation of manufactures of rubber into the United Kingdom has been prohibited since May 10, 1917.

Senate Adopts Surtax on Automobiles

Motion of Senator King for Surtax of $10 on Each $500 Value on Motor Cars Costing More Than $3,000 Passes Upper Chamber—War Revenue Bill Under Discussion Daily

Special Washington Correspondence

WASHINGTON, D. C., AUGUST 23, 1917.

The war-tax revenue bill, which became the unfinished business before the Senate on Aug. 10, has been before this body for discussion daily. The House is practically marking time awaiting Senate action. The last developments in the Senate revision seem to point toward the shifting of the burden of taxation from individuals of average means to war profits and large incomes.

On Monday, August 20, Senator Johnson of California completed what was apparently the opening drive in this direction, following the efforts of Senators Jones of New Mexico and Bankhead of Alabama. Senator Hollis of New Hampshire backed up these efforts later in the day, but to Senator La Follette is due the chief work in revising this bill.

It is understood that Senator Borah of Idaho will speak in this connection and that others will follow, which implies further amendments and debates, probably postponing agreement to vote on this bill until after Saturday.

The Finance Committee, it is understood, which reported this bill with its amendments nearly two weeks ago, will fight all amendments, heeding only the will of an absolute majority, and it is only to be expected considering the amount of time and careful consideration they gave the original bill.

Two amendments to the bill were presented Tuesday by Senator Weeks; one exempting prepared or manufactured cocoa and chocolate from taxation, the other providing that funds derived from the sale of ships and marine equipment shall not be termed as profits under this act.

It was learned recently at the capitol that absent Senators have been summoned by telegraph, and that party leaders are endeavoring to have every one on hand to vote on the main points now under consideration. Although it is possible that action on amendments will be reached early next week, action on the bill itself will hardly come up before the end. In his speech Tuesday, Senator La Follette favored higher levies on war profits, and large income taxes, which it is estimated will increase the income from the bill more than $1,494,000,000. He also advocated eliminating consumption taxes and urged the authorization of fewer bonds and more taxes, shifting the weight of the war tax from the people to capital.

Undoubtedly Senator La Follette will have quite a following, for sentiment in the Senate in this connection appears to be growing stronger daily and proposals for higher rates on war profits and income taxes will be incorporated in Senator King's substitute bill. It is believed that nearly thirty Senators will demand higher levies.

Reviewing the progress of the past ten days on this bill: Early in the discussion Chairman Simmons explained for the Finance Committee that whereas the expenditures of the country previous to the war had been about $800,000,000 per year, this year they would approach $10,000,000,000. Of the total $2,006,970,000 estimated revenues, he said that $1,400,000,000 would be raised from income and war profit taxes, which, he argued, should be the chief sources of war revenue. He indicated that by its amendments the Senate had relieved the people from paying several hundreds of millions of dollars which they would have had to pay under the House bill.

In order to show a comparative tax on larger corporations as designated by the House and Senate, Senator Simmons made the following statement:

	Estimated excess profits	Tax under Senate bill.	Tax under House bill.
U. S. Steel Corporation.....	$207,945,000	$76,726,000	$21,685,000
Bethlehem Steel Corporation..	53,715,000	25,045,000	7,124,000
Gen. Elec. Co...	6,523,000	1,136,000	1,083,000
Anaconda Corp. Mining Co....	39,087,000	14,512,000	5,817,000
AmericanSmelting & Ref. Co.	11,158,000	2,492,000	1,228,000
DuPont Powder Co.....	76,581,000	35,922,000	11,240,000
Penna R R....	11,741,000	1,699,000	.....
Big Four R.R...	5,843,000	1,938,000	.....
Baldwin Loco. Co.....	1,324,000	203,000	75,283
Standard OilCo.	20,425,000	5,065,000	4,024,000
Corn Products Co.....	3,798,000	1,036,000	.....
U.S. Rubber Co.	4,537,000	901,000	.....

On August 14, Senator Penrose, ranking Republican of the Finance Committee, and Senator McCumber, also a Republican member, made known their approval of the revenue bill as a war measure. Senator Penrose, while admitting that some of the taxes imposed were heavy, reminded the country that they were but temporary, expressing his belief that all industries were willing to pay their shares. He also said that following the end of the war this country would be obliged to establish a protective tariff for its revenues and to enable it to meet the business competition of the world. On behalf of himself and Senators Gore and Thomas, Senator La Follette submitted the views of the minority on the Finance Committee.

Briefly, this report asserted that the pending measure was wholly inadequate to meet the financial needs of the Government, and that it did not levy heavily enough upon business engaged in manufacturing war materials. The report charged that the estimates of the Treasury were misleading, and asserted that the total expenditures of the United States for the first year of the war would aggregate $13,000,000,000, and probably reach to $17,000,000,000 if further advances required by the Allies are included.

The minority report fixed this probable advance to the Allies as an additional $4,000,000,000 loan. For these reasons the minority contended the estimated $2,000,000,000 to be raised by the pending bill would not approximate the needs of the Government for the first year of the war. Although no substitute bill was offered by the minority, Senator La Follette said he would offer one later if certain amendments to be offered are not adopted.

On August 16, Senator Weeks proposed an amendment to strike from the bill the proposed increase in postage on second-class mail postage and to eliminate also the additional tax imposed upon publishers' profits.

Rapid headway was made on the bill Friday, August 17. Among the many important provisions adopted were: taxes on liquors, except wine; tobacco; transportation, except parcel post and stamp taxes. The prohibition features were adopted without a dissenting vote

The discussion of automobile taxes came up again on Saturday, August 18. On motion of Senator King during consideration of the war revenue bill, a surtax of $10 on each $500 value on motor cars costing more than $3,000 was adopted in the Senate.

The Saturday session was responsible for sustaining the committee's amendment imposing a tax of one cent on all parcel post packages costing twenty-five cents or more. The first reverse the committee has met with occurred also on Saturday, when by a vote of 38 to 22 the proposed bank check tax was stricken from the bill, thus eliminating about $10,000,000 prospective income from the tax.

The latest information seems to indicate that a vote on the bill proper will be taken in five or six days.

More than nine billion dollars has already been appropriated by Congress for the support of the Government and the prosecution of the war for the fiscal year 1918. Estimates amounting to $6,000,000,000 more are now before the House Committee on Appropriations and there are hints from the departments of still another $3,000,000,000 to come.

The appropriations of the extra session of Congress since April, exclusive of the provision for the departmental needs, which failed of passage in the previous session, amount thus far to $7,147,222,907.06.

It is feared by the Appropriations Committee leaders of House and Senate that the total appropriations for the current fiscal year may reach close to $20,000,000,000. Two billion dollars have been raised by bonds, $2,000,000,000 by short-term certificates.

The question that is bothering Congress is where the additional revenue is to come from.

International Rubber Exposition

Preliminary plans are being formulated for the Fifth International Rubber and Allied Trades Exposition to be held in London in May or June of 1920. Sir Henry A. Blake, G. C. M. G., the president, who was formerly governor of Ceylon, the Bahamas, Newfoundland, Jamaica, and Hong-Kong, will have charge of the exposition. His Majesty, King George V, has consented to act as patron.

Simultaneously with the rubber exposition will be held the Second International Cotton, Fibres, and Other Tropical Agricultural Products and Allied Trades Exposition.

At the last exposition held, some fifty-four British and foreign governments were officially represented, besides various associations and societies connected with tropical and semi-tropical countries. Manufacturers of the finished articles and makers of machinery also sent exhibits.

Patriotic War Convention

An emergency call has gone forth from the Chamber of Commerce of the United States to the business men of the country for a great war convention to be held at Atlantic City, September 17 to 21. It is expected to be the largest gathering of business men ever held and will show to the world that American business recognizes its duty in this crisis and stands solidly behind the government in war.

Rubber Interests at Exposition

The Third National Exposition of Chemical Industries, which opens on September 24 in the Grand Central Palace, New York, will be the largest exposition of its kind ever held. It will occupy three floors of the Grand Central Palace, and have about 350 exhibitors.

The exposition will cover all the ramifications of chemical industry. Many exhibits have been arranged, among them one of interest to rubber manufacturers.

News of the Rubber Metropolis

War Tax May Hit Akron Companies—Business Far from Depressing Reports Miller—Royal Send Off for Militia—Rubber Center Is Manufacturing War Supplies

Huge Tax for Rubber Companies?

(Special Akron Correspondence)

If figures compiled by J. P. Morgan & Co. hold good in Akron the rubber companies there are going to pay an enormous excess profit tax to the Government.

Basing the prediction on the report that the excess profit tax of the United States Rubber Co. will amount to $901,000, Akron rubber men figure that the large companies here will be forced to raise at least $1,800,000. The tax will hit the Goodrich, Goodyear, Firestone, General, Swinehart, American Hard Rubber, American Rim & Tire, Miller, Rubber Products, Marathon, Portage and other companies, such as the Kelly-Springfield, having Akron factories.

Miller Reports Business Increase

(Special Akron Correspondence)

President Jacob Pfeiffer, of the Miller Rubber Co., has issued a report of the business transacted by his firm during the first seven months of 1917, which would indicate the war is anything but depressing to the rubber business. The report, which follows, shows the business to be 85 per cent ahead of the same seven months in 1916:

	1916.	1917.
January	$416,780	$706,160
February	347,786	774,646
March	503,755	856,257
April	466,145	1,082,869
May	555,597	1,055,216
June	658,768	1,091,162
July	650,205	1,039,463

Basing his prediction on the foregoing figures, Mr. Pfeiffer predicts a business for 1917 exceeding by from ten to twelve million dollars the business for 1916.

Tramping Trips Planned

(Special Akron Correspondence)

Wallace Schneider, president of the Goodrich Walkers' club, is planning a number of foot tours to spots near the Rubber City inaccessible by automobile.

Mohawk Rubber to Build Large Garage

(Special Akron Correspondence)

A permit for the construction of an $18,000 garage has been issued to the Mohawk Rubber Co. by the city building department. The garage will be built in East Akron and will be used to house cars owned by the company and its employes. Work is already under way.

Goodrich to Have Swimming Club

(Special Akron Correspondence)

Goodrich employes have called a meeting of all swimmers among them for the purpose of organizing an aquatic club.

Goodrich School Opens September 17

(Special Akron Correspondence)

A pageant of all nations will feature the opening of the Goodrich Cosmopolitan School at the factory, September 17. The school provides education in American language and methods for alien workers at the Goodrich plant.

Courtesy Wins Five Dollars

(Special Akron Correspondence)

"Courtesy is the highest degree of politeness; the art of doing and saying the kindest thing in the kindest way, to all mankind, at all times."

This definition won $5 for S. V. Norton, of the Cleveland branch of The B. F. Goodrich Co., in a recent contest to find the best definition for the word "courtesy."

Send Off for Akron Militia

(Special Akron Correspondence)

Greeted by thousands of Akron people, Akron's militia was given official Godspeed August 15, coming in from the camp at Silver Lake for the special exercises.

The boys, including many rubber workers, were presented with pocket French-English dictionaries and tobacco, each man receiving his farewell token as he stood at attention in the court-house square, where Mayor William J. Laub and Crannel Morgan, president of the Chamber of Commerce, delivered the farewell addresses.

Part of the Akron troops have already been transferred to Fort Perry, Ohio, from which camp they will leave for France. Other companies are momentarily expecting to receive six-hour marching orders.

Goodrich to Have Post Office

(Special Akron Correspondence)

Postmaster A. Ross Read recently returned from Washington, where he conferred with postal authorities on the advisability of providing more sub-stations for Akron. Besides recommending a separate station to care for the mail at the B. F. Goodrich Co., he advises that the plans for Akron's new post office, already authorized, be enlarged to meet future needs of the rubber metropolis.

Athletic Association for Women

(Special Akron Correspondence)

The girls of The B. F. Goodrich Co., with the help of Eddie Connelly, athletic director, are planning a big rally early in September on which occasion they will form the Goodrich Women's Athletic Association, which will be self-governing and will provide sport and entertainment for the women employes of Goodrich.

Akron Manufacturing War Supplies

(Special Akron Correspondence)

Akron is manufacturing war supplies valued at $50,000,000 a year, according to figures just compiled by business statisticians.

The big sum is accounted for by the fact that there is an unusual demand for tires, coats, boots and medical supplies for the army. The cost of the blimps being manufactured here, together with many yards of balloon fabric, was also considered.

Philadelphia Rubber Adding Buildings

(Special Akron Correspondence)

The Philadelphia Rubber Co. is making plans to increase its output. Two more buildings will be built for manufacturing and additional men will be hired. The new buildings are to be on Bartges St. One will be a two-story addition valued at $10,000; the other a separate two-story structure valued at $20,000.

Seiberling Active in Golf Club

(Special Akron Correspondence)

Work on the new Fairlawn Heights golf club has been started west of the rubber city. F. A. Seiberling, head of the Goodyear Tire & Rubber Co., is very active in the club's affairs, and the links are not far from his home.

The organization will be different from most country clubs in that winter as well as summer sports are being provided for. An artificial lake is being made to afford skating in cold weather. Skiing, snow shoe hikes, and tobogganing will be provided as well as golf and tennis, the summer pastimes.

Many Goodrich Men Join Colors

(Special Akron Correspondence)

Goodrich employes are not without representation in the American fighting forces in the present emergency. Fully 300 factory men and 50 from the offices are with the fighting units. Of these it is estimated that 85 per cent are in the army proper. Two of the men are known to be in the aviation service.

Information Exchange

In this department are printed inquiries of a technical or commercial nature that are received by THE RUBBER AGE. *Readers are invited to send helpful replies to the questions asked, so that they can be printed in this department.*

Dissecting Old Automobile Casings

Inquiry from W. F. K., Mississippi.—Will you give us some process for separating old automobile casings, that is to say processes for separating the tread from the carcass and each ply from the other without injuring the fabric? Also a process for making the fabric plies absolutely flat after separating them. This means that we want to remove the circular shape given to the plies of fabric in building up the casing.

Seamless Dress Shields

Inquiry from R. W. R., New York.—Can you tell us where we can secure special machinery for making dress-shields? Also if it is possible to make such articles out of rubber coated silk taffeta without any visible seams. We would also like to know if it is possible to join the above-mentioned materials or rubber sheet, such as is used in dress-shields, without using a rubber cement.

Rubber Laboratory Equipment

Inquiry from A. R. B., Ontario.—Kindly supply names of manufacturers of rubber laboratory equipment and supplies. Especially interested in testing apparatus.

Pinking Machine and Edge Turner

Inquiry from N. R. C., New Jersey.—We desire to know who manufactures pinking machines for cutting band for edges of gloves, bathing caps, and also for rolling edges of gloves, bathing caps, etc.

Skiving Machine

Reply to Inquiry from C. V. C., Indiana.—Skiving machines which skive down edges of inner shoes and carcass reliners are manufactured by the Maxwell Manufacturing Co., Wichita, Kansas.

American Rubber Patents

ISSUED AUGUST 7, 1917.

1,235,546—To Bertel N. Brosvik, Duluth, Minn. Tire-Securing Device.

1,235,597—To Harry Raflovich, New York, N. Y. Wheel-Rim and Tire Construction.

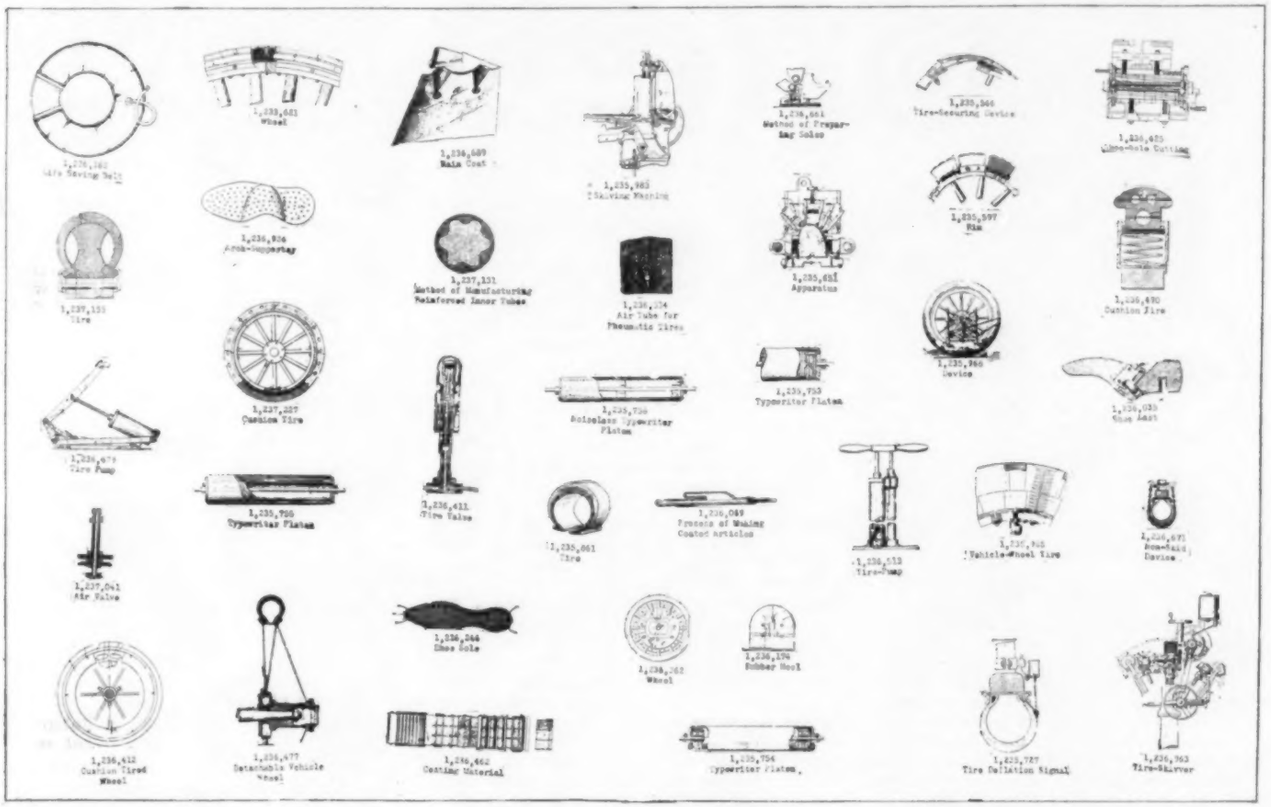
1,235,621—to Harris Weiner, New York, N. Y. Vehicle Wheel.

1,235,651—To Louis M. Brown, Beverly, Mass., assignor to United Shoe Machinery Company, Paterson, N. J., a corporation of New Jersey. Method and Apparatus for Use in Forming Uppers of Boots and Shoes.

1,235,670—To William H. Falls, Bridgeport, Conn. Non-skid Chain Attachment for Rubber-Tired Wheels.

1,235,727—To Wallace W. Robinson, Portland, Me. Tire-Deflation Signal.

1,225,753—to Nils H. Anderson, Middletown, Conn., assignor of one-half to William A. Lorenz, Hartford, Conn. Typewriter Platen.



1,235,754—To Nils H. Anderson, Middletown, Conn., assignor of one-half to William A. Lorenz, Hartford, Conn. Typewriter Platen.

1,235,755—To Nils H. Anderson, East Hampton, Conn., assignor of one-half to William A. Lorenz, Hartford, Conn. Typewriter Platen.

1,235,756—To Nils H. Anderson, East Hampton, Conn., assignor of one-half to William A. Lorenz, Hartford, Conn. Noiseless Typewriter Platen.

1,235,757—To Fernley H. Banbury, Ansonia, Conn., assignor to Birmingham Iron Foundry, Derby, Conn. Machine for Treating Rubber and Other Heavy Plastic Material.

1,235,850—To David Spence, Norwalk, Conn. Process of Devulcanization.

1,235,852—To David Spence, Norwalk, Conn. Process for Removing Combined Sulphur from Vulcanized Rubber.

1,235,861—To Herbert N. Wayne, Los Angeles, Cal., assignor to William J. Ennis, Los Angeles, Cal. Tire.

1,235,968—To Daniel W. Getter, Dayton, Ohio. Anti-skid Device for Vehicles.

1,235,983—To Elmer E. Lane, Beverly, Mass., assignor to United Shoe Machinery Company, Paterson, N. J. Skiving-Machine.

1,236,035—To Andrew R. Anderson, North Arlington, N. J. Shoe-Last.

1,236,049—To James H. Butler, Gloversville, N. Y., assignor of one-half to Frank W. Austin, Gloversville, N. Y. Process of Making Coated Leather Articles.

1,236,174—To Edward J. Hooper, Stoughton, Mass. Rubber Heel.

1,236,183—To Henry K. Kiso, New York, N. Y. Coating Composition and Process of Making the Same.

1,236,190—To James P. A. McCoy, Wilkinsburg, Pa., assignor to Westinghouse Electric and Manufacturing Co., a corporation of Pennsylvania. Cement and Process of Making Same.

1,236,244—To Fernando Alonzo E. Yzaguirre and Julion Villa, Dundee, Scotland. Shoe-Sole and Method of Making the Same.

1,236,251—To Paul Balko and Anton Kocovsky, Milwaukee, Wis. Non-skid Device.

1,236,362—To Lester John Rickard, Walla Walla, Wash. Wheel.

1,236,365—To Harry Botwright Rogers, London, England. Life-Saving Belt.

ISSUED AUGUST 14, 1917.

1,236,411—To Willard F. Downs, Bay Shore, N. Y. Tire Valve and Signal.

1,236,412—To Edward F. Dreman, Cleveland, Ohio. Cushion-Tired Wheel.

1,236,425—To Thomas H. Graudpm, Cincinnati, Ohio. Shoe-Sole-Cutting Machine.

1,236,460—To James McIntosh, Norristown, Pa., assignor to Diamond State Fabric Co., Elsmere, Del. Waterproof Material and Process of Making Same.

1,236,462—To William F. McKay, La Grange, Ill. Prepared Sheet of Coating Material and Method of Making the Same.

1,236,477—To Richard A. Penrose, Philadelphia, Pa. Detachable Vehicle-Wheel.

1,236,479—To Adolph Peteler, Freeport, N. Y. Tire-Pump.

1,236,490—To Ralph Dean Shirey, Woodland, Pa. Cushion Tire.

1,236,506—To George S. Van Voorhis, Boston, Mass. Tire Shoe or Casing.

1,236,513—To William U. Watson, Chicago, Ill. Tire-Pump.

1,236,534—To John W. Blodgett, Chicago, Ill. Reinforced Air-Tube for Pneumatic Tires.

1,236,661—To Frederick E. Bertrand, Lynn, Mass., assignor to United Shoe Machinery Company, Paterson, N. J. Method of Preparing Soles.

1,236,671—To Holley Carrol, Boone, Iowa. Non-Skid Device.

1,236,689—To Malcolm C. Doubles, Richmond, Va. Rain-Coat.

1,236,821—To William T. Carey, Cranston, R. I. Tire.

1,236,924—To Meletios Golden, Boston, Mass. Arch-Supporter.

1,236,963—To Bert Earl Maxwell, Wichita, Kans. Tire-Skiver.

1,237,041—To Ernest Alfred Hilding, Lidkoping, Sweden. Air-Valve for Pneumatic Tires for Bicycles or the Like.

1,237,131—To Homer G. Welch, Philadelphia, Pa. Method of Manufacturing Reinforced Inner Tubes of Pneumatic Tires and Mandrels Therefor.

1,237,155—To Morris E. Baxter, Steubenville, Ohio. Tire.

1,237,227—To John L. Swartz, Akron, Ohio. Cushion-Tire and Method of Making Same.

Recent Incorporations

Century-Plainfield Tire Co., Plainfield, N. J.; capital, $100,000; to manufacture tires, inner tubes, etc.

Mogul Tyres, Inc., Wilmington, Del.; capital, $2,500,000; to trade and deal in automobile tires and goods made of rubber and other fabrics.

Sternwear Tire Sales Co. of Minnesota, Wilmington, Del.; capital, $150,000; to manufacture and deal in tires and tubes.

The Normany Tire & Rubber Co., St. Catharines, Canada; capital, $1,000,000; to manufacture rubber goods of all kinds.

The California Tire & Rubber Mfg. Co., Los Angeles, Cal.; capital, $250,000; incorporators, J. H. Crube, P. C. Tennis, P. J. Maurer, J. W. Gunther and L. M. Tennis.

International Fibre Co., Trenton, N. J.; capital, $200,000; to manufacture fibre soles, rubber goods, etc.; incorporators, P. E. Wurfflein, W. Keegan and LeRoy W. Skelton, all of Trenton.

The Consumers' Tire & Tube Co., Eau Claire, Wis.; capital, $10,000; incorporators, Wm. S. Mason, G. L. Blum, Genevieve L. Blum.

Muskogee Tire Repair Co., Muskegon, Texas; capital, $1,400; incorporators, R. Y. Edwards, G. F. McIntyre, C. M. Cagle.

Mason Tire & Rubber Co. of New York, Inc., New York City; capital, $5000; to deal in automobile tires and rubber goods; incorporators, G. H. Burrows, L. O. Miller, P. J. Dorr.

Palmer Rubber Co., Poughkeepsie, N. Y.; capital, $10,000; to manufacture automobile tires and rubber goods; incorporators, E. K. Dunsenbury, J. F. MacDonald, E. D. Palmer, all of Poughkeepsie, N. Y.

Endurance Tire Sales Co., New York; Capital, $10,000; To manufacture tires; Incorporators: John Burlinson, Philip R. Straus and J. Stuart Eakin.

Atlanta Tire Rubber Co., New York; Capital, $1,000; To manufacture tires; Incorporators: C. A. Weldon, Sydney Berhein and Harry Jacobson.

S. & S. Rubber Co., Inc., New York; Capital, $5,000; Incorporators: William Reisfield, G. A. Cymberg and Leo Kraus.

Double Mileage Tire Co., Houston, Tex.; Capital, $5,000; Incorporators: J. N. Bolton, H. H. Rankin, F. H. Spiller.

The Outlet Co., Inc., New York City; Capital, $1,000. To deal in automobile tires; Incorporators: G. H. Parcells, J. B. Purcell.

Market for Manufactured Rubber Goods

NEW YORK, August 25.

Day by day developments disclose the fact that the most unsafe sort of news one hears is that which seeks to generalize on conditions.

The conditions in different lines of rubber goods, and also indifferent concerns manufacturing or selling a same line of rubber articles, vary more than ever before in the history of the trade. One manufacturer or dealer may be telling the exact truth in saying that the trade in his concern is dull. Another, manufacturing or selling the same class of gods, may also be telling the truth when he says business is good.

Some merchants have been very heavy buyers, while others have acted conservatively. The result of this is that some have more goods on order and being delivered than ever before in the history of their business at this season of the year. This makes them anxious and gives them the impression that merchandise is not moving as fast as usual.

So far as enterprise and future commitments are dependent on national legislation, much of the doubt and uncertainty have been removed by the adoption of food, feed and fuel control measures, but there still remains the war revenue measures, which must have a very important influence on the future conduct of business.

It has not yet been determined what proportion of the war expenditures is to be secured from taxes and what from bond issues. Further, there is the decision as to the excess profits tax. Business interests are not opposing this latter measure in the abstract; they concede its justice and its value as a revenue producer in wartime. But they oppose certain features which are put forward, and above all, would like to see matters reach a definite basis.

MECHANICAL GOODS

Mechanical goods people are now lining up their sales forces for the fall campaign which will start after Labor Day.

There is no lack of confidence expressed that a good fall distribution is ahead, but there is much uncertainty as to the supply of fabrics which are so important in the manufacture of mechanical rubber goods.

Mechanical goods people in closest touch with financial factors forecast no decline at all in business, but they feel that prices have about reached their uppermost limit and that further advances will be resisted more generally. There is talk of lower prices unless these continue to be prevented by the high cost of raw materials and labor.

Much Government business has been placed in many lines but war contracts for rubber mechanical goods have not been sufficiently important to cause any pressure of work in the factories.

SOLES AND HEELS

The sole and heel situation remains unchanged; some manufacturers are doing exceptionally well, while others have large stocks and cannot move them as would be desirable. The consumption of rubber soles and heels, however, is growing rapidly, and next season promises to show far more of them than were worn this year.

TIRES

Reports from the tire trade vary. Some dealers say their sales show a substantial improvement over last year's business. Others find conditions very quiet. This state of affairs is no doubt partly due to the fact that some dealers contracted for unusually large quantities of merchandise, while others have been more conservative. The latter have no difficulty in selling all the tires they can get, while the former find that they have more goods on hand and to take than they did at this time last year.

However, there is no doubt but that the consumption of tires has been greater this year than ever before, and business conditions are good considering the state of war. When people return from vacations it will be easier to judge conditions. No price increases have occurred.

DRUGGISTS' SUNDRIES

More and more as the war goes on people can be expected to adopt the plan of buying goods as they need them. But this does not necessarily imply dull nor unprofitable business. It may mean a quiet during the first weeks of the druggists' sundries season, now beginning, but retailers can expect people to buy and in turn they will have to replenish their stocks.

There is no doubt but that in war time the purchasing power of the masses becomes greater than under normal conditions, that goods are apt to be less plentiful than in peace years, and it is safe to assume that the hesitancy now characteristic is only the foundation of far greater future business.

People need druggists' sundries and they will buy them. That economy was bound to be forced through high prices in most lines of necessities and commodities was never doubted, but the country will adjust itself to the abnormal conditions and business will ever move ahead.

FOOTWEAR

The rubber footwear industry is still booming. For spring manufacturers will feature cloth top shoes with rubber soles and heels. They believe that the increased cost of sole leather and fancy kid have placed these classes of footwear beyond the reach of the average person. Plain models appear to be in greater demand than colonials and other fancy designs of low cuts for women.

GOVERNMENT PURCHASES BOOTS

Contracts were awarded during last week for rubber boots for the army as follows:

United States Rubber Co., New York—50,000 pairs hip boots at $4.27.

Mishawaka Manufacturing Co., Mishawaka, Ind.—10,000 pairs knee-length boots at $2.94 each.

The B. F. Goodrich Co., Akron, O.—25,000 pairs hip boots at $4.27.

Hood Rubber Co., Watertown, Mass.—25,000 pairs hip boots at $4.27.

The United States Rubber Co., New York, also received an order to supply 32,000 pairs of arctics at $2.88 a pair, Philadelphia delivery.

The Fabric Market

NEW YORK, August 25, 1917.

The general tendency of the raw cotton market during the fortnight has been downward, due to continued favorable crop advices from the greater part of the cotton belt, about the only poor sections being still in southern and western parts of Texas, where the drought has not yet been relieved. The general opinion appears to be that any loss in those sections will be offset by large yields everywhere else, and that on the whole more cotton will be picked than can readily be marketed at the present price level under existing war conditions.

The Pope's peace appeal led some to believe that these war conditions would not continue much longer, but there seems to be little probability of this move producing any immediate results. The war is likely to last through long months to come.

Prices dropped from 64 to 73 points on August 22 on favorable crop reports, increased hedge selling and general liquidation, together with the rumor that the spot basis in the South was breaking. Heavy selling in New Orleans had much to do with the break.

On August 23, after a day of nervous fluctuations, prices were irregular at the close, falling off 7 to 27 points. Business was light. Southern selling increased in volume.

The amount of cotton consumed in the United States during July, 1917, according to preliminary statistics compiled by the United States Bureau of the Census, was 541,496 running bales (counting round as half bales), compared with 489,528 bales for the corresponding month in 1916. The amount for the year ended July 31, 1917, was 6,801,188 bales, compared with 6,397,613 bales for the preceding year. The amount of cotton on hand July 31 in consuming establishments was 1,498,939 bales, compared with 1,632,245 bales in the preceding year, and the amount in public storage and at compresses was 888,117 bales, compared with 1,107,464 bales in the preceding year.

The monthly figures include 21,939 bales of foreign and 8,001 bales of Sea Island consumed, 94,327 bales of foreign and 36,584 bales of Sea Island held in consuming establishments, and 49,679 bales of foreign and 19,912 bales of Sea Island held in public storage.

Linters not included were 84,387 bales consumed during July in 1917 and 61,072 bales in 1916, 111,457 bales on hand in consuming establishments on July 31, 1917, and 100,441 bales in 1916, and 200,798 bales in public storage and at compresses in 1917, and 113,106 bales in 1916. Linters consumed during the twelve months ending July 31 amounted to 867,309 bales in 1917 and 880,916 bales in 1916.

EGYPTIAN COTTON

The supply of Egyptian cotton in America still remains a subject of speculation; no one knows what it will be, but many indications point to a shortage in the early months of 1918 unless shipments improve.

The condition of the Egyptian cotton crop is in the whole satisfactory. During the first half of June there was some apprehension owing to cold weather, especially at night, but warmer weather was experienced in the second half of the month. The water supply has been ample. In certain districts the cultivators have flooded their cotton, causing flower shedding. The cotton worm is apparently well under control. Damage has been caused in certain small areas by a disease in some respects similar to the American cotton "wilt."

Advice by mail from Alexandria, under date of July 13, describes the cotton market there as very excited, fluctuations ranging practically during each session to three dollars a cantar. What principally contributed to strengthen the market was the announcement of shipping facilities for America, also higher prices fixed for Egyptian futures business in Liverpool.

At that time it was believed in Alexandria that about 10,000 bales of cotton would be shipped the following week to

America, and there were good prospects for freight facilities also for England and Japan.

The Egyptian Government was considering what measures should be taken to assure the reliability of the Alexandria Cotton Futures Exchange. It was generally felt that in time of war, with cotton at about $58 and prices fluctuating enormously during every season, the ordinary safeguard of payment of differences was not sufficient, and the cotton export trade was insisting that the "jobbers" should be excluded from the Exchange and that any person wishing to operate in futures should deposit $4 per cantar (4 cents per pound), and that this deposit should be held until the business is closed out. It was not suggested that the deposit should apply to business open at that time. The payment of differences would continue as heretofore.

SEA ISLAND

It is practically impossible to give any reliable information about the Sea Island cotton crop now growing. However, reports show that generally the crop is doing well and that boll weevil is not much in evidence.

The only recent transaction of note was the sale about a week ago of 51 bales average Extra Choice at 70 cents first cost.

The general opinion now leans to the view that supplies of Sea Island, like those of other cottons, will be ample.

Several cotton manufacturers in New Bedford, Mass., have notified the cotton brokers and dealers from whom they buy cotton that, commencing this season, they will purchase only on the basis of payment ten days after arrival. At the New York Cotton Exchange it is said that does not mean that the mills will be able to enforce this edict. The general custom in New Bedford, as elsewhere, has been to pay for all cotton except Egyptian on receipt of the draft and the bill of lading, which is within a few days after the cotton has been shipped from the South and often weeks before it reaches New Bedford.

The action of the mills is said to have been dictated by the large amount of trouble they have experienced through cotton shipments falling below the sample on which they were sold. The brokers deny receiving complaints on this matter, and there is talk of forming an association to defend their interests.

The following is the closing on August 24, also the closing a year ago:

	Closing	
	August 23	Last year
August	24.57 bid	15.05 @ 15.09
September	23.48 bid	15.10 @ 15.12
October	23.13 @ 23.20	15.09 @ 15.10
November	23.18 bid	15.13 bid
December	23.22 @ 23.24	15.22 @ 15.24
January	23.16 @ 23.21	15.27 @ 15.28
March	23.32 bid	15.40 @ 15.41
April	23.35 bid	15.46 @ 15.48
May	23.45 bid	15.54 @ 15.55
July	23.55 bid	15.69 @ 15.71

YARNS

Cotton yarn prices are very irregular; this is particularly the case with combed yarns. The spinners who are well sold up for two or three months are not willing to consider making any price concessions, and the manufacturers who want their yarns must pay the spinners' price or go without the goods. The spinner who needs business is willing to consider buyers' ideas of values. Some Southern yarn quotations are higher than prices for better grades of Eastern yarns.

Manufacturers of tire fabrics have been heavy buyers of combed yarn, and their buying has helped in making the high prices for these yarns. Fully 25 per cent of the tire fabric looms of this country have been put to making other materials for the Government, and it is rumored that even a larger proportion will soon be diverted. The Government cloths made on these looms do not call for combed cotton yarns, and some believe that this development will help to lower combed yarn prices.

High prices have checked consumption in many directions and it is pretty generally admitted that if it were not for the buying of cotton yarn for the filling of Government contracts cotton yarn prices would drop immediately.

FABRICS

The consumption of most all articles of trade has been greatly reduced by the high values prevailing in all lines. The cotton and fabric situation has reached a stage that is causing no small amount of anxiety in certain quarters. The cost of producing fabrics has risen to such an extent that there is doubt as to the possibility of the consumer being able to absorb the output of the mills, even curtailed as it is by the extent of Government work.

Without the spur of Government demand the fabric market would be rather flat.

Prices are too high to warrant hope of large trade and there is the general tendency to economize. Money for trade purposes is not so readily obtainable as it was some months back. Generally speaking, there is too much interference with normal business methods to hope for good trade for months to come.

However, men well versed on the trend of manufacturing and distribution are of opinion that the Government will take 15 per cent of the total output of American cotton mills for the next half year, and they figure that this business combined with the domestic civilian requirements and those of the export trade will keep the mills busy and the mills independent.

TIRE FABRICS

There has been no changes in the tire fabric market. Prices are being held firm by the mill men, though quite some yardage of fabric has been sold by tire manufacturers who have contracted for more than they need now that business has slackened more than could have been expected a few months ago. Most of the tire manufacturers selling have done so at a substantial profit.

There is much talk of the Government taking over more tire looms. This, together with the possible shortage of suitable cottons, has caused the mill men to hold their position as to prices. It is estimated that there are nearly 3,000 looms engaged in weaving tire fabrics.

HOSE AND BELTING FABRICS

The mechanical duck situation is still unsolved, but it is hoped that some arrangement will soon be made with the Government to release looms from Government work and return them to the weaving of hose and belting ducks.

DRILLS, OSNABURGS AND SHEETINGS

Business in these fabrics for other than Government purposes is very conservative in character. Lower cotton has developed some weakness in these lines, though supplies are limited. There is no lack of confidence in the future but everyone prefers to go ahead carefully. Further, there is no small amount of talk of lower and even controlled prices for cotton and cotton products.

GARMENT CLOTH

As in other textile lines, in garment cloths it is the volume of Government business that is maintaining the high prices which make long future trade very uncertain. Outside of Government demand the market is dull. There is confidence in the future trade, but great precaution is being exercised in placing orders.

BURLAPS

The burlap trade is showing renewed activity. Fair sales are reported, chiefly to bag makers preparing to work on Government contracts.

Prices in light weights remain unchanged. There is scarcity of goods, however, and advances are probable. There has been a good demand for goods to arrive, some of the arrivals being quite distant.

NEW YORK QUOTATIONS

TIRE FABRICS.		
17¼-ounce Sea Island, combed.	sq. yd.	$1.60@1.70
17½-ounce Egyptian, combed		1.40@1.45
17¼-ounce Egyptian, carded		1.30@1.35
17¼-ounce Peelers, carded		0.80@0.90
17¼-ounce Peelers, combed		1.00@1.05
American Carded Staple, 12 to 20 yarn, per lb. (pound basis)		.60
American Carded Staple, 8 to 10 yarn, per lb. (pound basis)		.55
MECHANICAL DUCKS		
Hose (spot)	lb.	.55
Hose (future)		.55
Belting (spot)		.55
Belting (future)		.55
DUCKS		
Single Filling (pound basis)	lb.	$ .52
Double Filling (pound basis)		.56
DRILLS		
37-inch 2.35-yard	yd.	.18¼
37-inch 2.75-yard		.16
37-inch 3.00-yard		.15¼
37-inch 3.25-yard		.14¼
37-inch 3.50-yard		.13¼
37-inch 3.95-yard		.12½
38-inch 2.00-yard Southern	lb.	.45
38-inch 2.00-yard Northern		.48
40-inch 2.47-yard Southern	yd.	.18
40-inch 2.47-yard Northern		.20
52-inch 1.90-yard Southern		.26½
52-inch 1.90-yard Northern		.27⅜
52-inch 1.95-yard Southern		.26
52-inch 1.95-yard Northern		.27
60-inch 1.52-yard Southern		.32
60-inch 1.52-yard Northern		.32¾
SHEETINGS		
40-inch 2.35-yard	yd.	.18½
40-inch 2.50-yard		.16⅜
40-inch 2.85-yard		.15¼
40-inch 3.00-yard		.14¼
40-inch 3.25-yard		.14
40-inch 3.60-yard		.13⅛
40-inch 3.75-yard		.11¾
40-inch 4.25-yard		.10
38-inch Jacket Cloths	linear yd.	.17@.18
TWILLS FOR PROOFING		
37-inch 2.85-yard	yd.	$ .16½
37-inch 2.35-yard		.19½
37-inch 2.10-yard		.23
COTTON STOCKINETTES (52-inch.)		
E—11½-ounce	yd.	.75
A—11 -ounce		.50
BURLAPS (Spot Carload lots.)		
40-inch 7½-ounce	per 100 yards	$10.20
40-inch 8 -ounce		10.30
40-inch 10 -ounce		13.87½
40-inch 10½-ounce		13.25

Chemicals and Compounding Materials

NEW YORK, August 24, 1917.

While the inquiry for chemicals and compounding materials showed improvement, manufacturers were not disposed to place any heavy contracts at this time, owing chiefly to a feeling of uncertainty regarding the future. On the other hand the undertone remained firm and price changes noted were upward revisions. A feature in the market was the strength in caustic soda, offerings of which were comparatively small.

The demand for sulphur still exceeds the supply, but prices closed unchanged. With little change in basic materials the market for the metallic pigments was a featureless affair. The chemical colors ruled firm, owing to the high cost of production. Oils and solvents were firmer in all quarters. There were no new developments in the market for fillers.

ANTIMONY

There was a steady demand for sulphuret of antimony and with stocks

moderate prices were firmly maintained for all grades. Some factors report that they have little to offer for delivery over the remainder of the year. Red sulphuret was quoted at 25 @ 27c. per pound, as to quantity and time of shipment, with the golden quoted at 28 @ 30c. and the crimson at 52 @ 54c.

BENZOL

While stocks of pure benzol are ample for all ordinary requirements, producers report that the supply available has been reduced by recent buying for foreign and domestic accounts. The market closed firm at 55 @ 60c. per gallon, as to quantity and style of container.

CAUSTIC SODA

Under a steady demand from speculative and consuming channels the market for caustic soda developed further strength and prices at the close were more or less nominal, ranging from 8½ to 9c. per pound for the 76 @ 78 per cent, as to quantity and seller.

DRY COLORS

Trading in dry colors was described as routine, but with stocks light; a firm undertone featured the market. Rubbermakers' lampblack was quoted at 4½ @ 5½c. per pound. English vermillion was steady at $1.90 @ $2.10 per pound, reflecting the high cost of mercury. Prussian blue was steady at 74c. @ $1.50 per pound, depending upon quality. Ultramarine was firm at 25 @ 42c., as to quality.

LEAD PIGMENTS

An easier feeling was noted for pig lead, but as prices for the metal underwent little change the market for pigments closed unchanged on the basis of 11 @ 11½c. for the basic sulphate (sublimed). Imported lithopone was quoted at 6¼ @ 7c. per pound, according to seller and quantity.

ZINC PIGMENTS

Manufacturers report a good outlet for oxide of zinc and with no surplus stocks on hand prices are firmly maintained. American process zinc oxide was held at 10¼ @ 10¾c. per pound, contract, while dealers were asking from 16½ to 17½c. for spot goods.

SULPHUR

With crude brimstone moving slowly from the mines, owing to the labor and transportation situation, and with no abatement in the demand, refiners are hardly able to meet the requirements of the trade. The market for refined sulphur ruled firm, but the former schedule of prices was maintained. Flour was quoted on the basis of $3.85 per 100-pounds, in barrels, for car-lots. Commercial sulphur was quoted at $3.35.

Antimony, metal, spot	lb.	.16	@	.22
Asbestos	ton	40.00	@	55.00
Beta-naphthal, sublimed	lb.	.75	@	.85
unsublimed	lb.	.65	@	.70
Carbon bisulphide, bulk	lb.	.07	@	.08
Caustic Soda, 76@78%	lb.	.08½	@	.09
Magnesia, carbonate	lb.	.11	@	.14
73 @ 76 degrees				
Oil corn, crude	cwt.	14.25	@	14.50
corn, refined	cwt.	16.21	@	16.31
linseed (bbl.)	gal.	1.24	@	1.26
palm, Lagos	lb.	.17¼	@	.17½
Shellac, fine orange	lb.	.64	@	.65
Starch, corn, powdered	lb.	.06⅝	@	.06½
Toluol, pure, in drums	gal.	2.00	@	..
carnauba, No. 3	lb.	.40	@	.42

The Crude Rubber Market

NEW YORK, August 24, 1917.

Although there has been no great change in the general position of the crude rubber market the undertone has been easier. During the last two weeks fluctuations in prices were inconsequential, final quotations on the more important grades showing a net loss of ½ to 1c. per pound. General uncertainty regarding the future as well as the Government's policy of fixing prices for the necessities was reflected in a restricted volume of business.

While trading in the local market was of a routine character, so far as spot and nearby positions were concerned, manufacturers showed more interest in futures. It is known that certain large manufacturers have been buyers of plantation rubber for delivery over the first-quarter and first-half of 1918, in spite of the fact that the prices asked on the distant positions are in some instances higher than spot.

The London market closed today with standard No. 1 pale crepe at 29¾ @ 30d. per pound, prompt shipment, which compares with 30¾ @ 31d. a fortnight ago. No. 1 pale crepe for January-June delivery was called at 31½ @ 32d. per pound. Standard ribbed smoked sheets for prompt shipment was cabled at 28½ @ 28¾d. per pound. Private advices from London report that a good volume of business has been put through for direct shipment from the East to America, and there is a fair demand for plantations for shipment over the whole of next year. The movement of crude rubber to London has not been interfered with.

For the seven months ending with July 31 the landings at London amounted to 42,822 tons, which compares with 31,546 tons for the corresponding period a year ago, and 39,875 tons in 1915. Deliveries in London for the seven-months' period amounted to 39,785 tons, as against 31,447 tons for the same time in 1916, and 41,066 tons in 1915. The total stocks in London on July 31 amounted to 13,210 tons, as against 7,049 tons in 1916, 5,225 tons in 1915, 3,986 tons in 1914 and 3,736 tons in 1913.

First latex pale crepe closed today at 64½ @ 65c. per pound, spot delivery, 65c. for October-December and 65c. for January-March. A nominal price of 65c. was named for January-June. Smoked sheets on the spot closed at 64c., with January-March held at the same figure.

Brazilian rubber was inactive, yet no selling pressure was noted. Para up-river fine held around 70c. for spot delivery throughout the interval, while 68½c. was asked on futures. Up-river coarse closed at 47½c., with Caucho ball at 41½c. and Cameta at 30½ @ 31c.

Centrals were neglected and an easier feeling was in evidence. Prices, however, underwent little change as dealers felt that under present circumstances lower offerings would hardly attract buyers.

		Spot.	Oct.-Dec.	Jan.-Mar.
Para—Up-river fine	lb.	69½	68½	..
Up-river medium		63	62½	..
Up-river coarse		47½	47½	..
Caucho ball		41½	41	..
Islands fine		60	60	..
Islands coarse		30½	30	..
Cameta		31	30½	..
Madeira fine		71	..	..
Ceylons-Smoked sheets, ribbed		64	63½	64
Smoker sheets, plain		63	62½	63
First latex pale crepe		64½	65	65
Amber crepe		62	62	..
Clean brown crepe		58	58	..
Centrals—Corinto, prime		42½	42	..
Esmeralda, prime		41½	41½	..
Mexican scrap		40½	..	..
Balata, sheets		*62	..	..
Balata, block		54	..	..
Guayule		37	..	..
Africans—Rio Nunes, string		*67	..	..
Massai, red		*55	..	..
East Indian Pontianak		12	11½	..
Palembang		12¼	12	..

* Nominal.

Importations of Crude Rubber Into the United States in July, 1917

Figures compiled by The Rubber Association of America, Inc., 17 Battery Place, New York City. (Estimated net weights).

PLANTATIONS

From	*Tons*
Liverpool	160
London	1,471
Singapore	3,076
Singapore via Japan	1,203
Colombo	624
Penang	13
Penang via Japan	499
Batavia	2,419
Japan, and other countries	62
	9,527

PARAS

Manaos	419
Para	1,470
	1,889

AFRICANS

From	*Tons*
Liverpool	10
London	2
Hull	37
	49

*CENTRALS AND GUAYULE

Centrals (Mexica and Central America)	144
Guayule (Mexico)	105
	249

*Note—Owing to the war, we are temporarily unable to furnish complete statistics for rubber arriving on boats from Central America or rubber entered at the Port of Cleveland.

MANICOBAS AND MATTO GROSSO

Pernambuco	9

GUMS, WASTE RUBBER, ETC., IMPORTED FROM VARIOUS SOURCES

Scrap Rubber	793 Tons
Reclaimed Rubber	347 "
Jelutong	263 "
Balata	67 "
Gutta Siak	10 "
Gutta Percha	67 "
Gum Dumar	285 "
Gum Copal	351 "
Miscellaneous Gums	51 "

COMPARISON 1916-1917

	July, 1916	July, 1917
Plantations	5,042	9,527
Paras	1,070	3,582
Africans	100	49
Manitoba and Matto Grosso	79	9
Centrals	158	144
Guayule	58	105
	6,507	13,416

Arrivals Plantation Rubber for July, 1917—Showing Ports of Origin and Destination

From	*Arrived at*	*Tons*
Singapore	Seattle	2,668
Singapore via Japan	Seattle	914
Singapore via Japan	San Francisco	289
Singapore	New York	408
Penang via Japan	Seattle	499
Penang	New York	13
Batavia	New York	738
Batavia	San Francisco	1,681
London	New York	1,469
London	Boston	2
Liverpool	New York	160
*Japan	Seattle	62
Colombo	New York	609
Colombo	Seattle	15
		9,527

* Including other countries.

Scrap Rubber

The market continues quiet and prices are more or less nominal. The following quotations are those given by middlemen to consumers:

Domestic Scrap—			
Boots and shoes, No. 1, per lb.	9¼	@	9⅝
Trimmed arctics	7¼	@	7⅝
Bicycle tires	5	@	5¼
Auto tires	6⅞	@	7
Solid tires	7	@	7½
No. 1 inner tubes	25	@	26
No. 2 inner tubes	12½	@	12¾
Hose	2	@	2½
Red tubes	12½	@	12¾
Black rubber	3	@	4
Foreign Scrap—			
Boots and shoes, No. 1	8½	@	8¾
Auto tires	6	@	6¼
Airbrakes	3	@	4
White mixed	8	@	8¼
Red mixed	6⅝	@	6⅝

TIRE NEWS

The Michelin Tire Plant

The Michelin Tire Company, with extensive factories in France, Italy, and England, located in the United States ten years ago. Milltown, N. J., was selected as the site of the new plant, which today comprises twenty-two separate buildings with many acres of floor space.

The development of the Michelin company has been rapid. Today the concern has branches or subsidiaries in practically all of the leading trade centers of the country.

The Michelin company was founded in 1832 in Clermont-Ferrand, France, by the grandfather of M. Edouard Michelin, who in 1891 was made president of the French company, which became active in the manufacture of bicycle tires.

From the original French factory grew plants in Great Britain and Italy, expanding finally until the American field made necessary the construction of a Michelin manufacturing plant on this side of the Atlantic.

Although all Michelin factories produce an identical product, made by a French process, it was the American plant that brought out the first "Michelin Universal Tread," similar to the Michelin racing tire. This tread is made of a series of letter "M's," the outer surfaces of which are broad and flat. The sides of these letters are not rounded, but are square. The tires are made of from five to eight plies, dependent upon the size of the tire. Two breaker strips are employed instead of one.

Michelin claims to have found a solution in the housing problem that confronts almost every large labor center, in the construction of four-room bungalows, cedar shingled and slate roofed. These homes, with all modern improvements, are rented to the factory workmen practically at cost.

Amateur sports are fostered by a Michelin Athletic Association, supporting its own enclosed field, 620 feet long and 400 feet wide. A quarter-mile track, a baseball diamond, soccer field, and tennis courts are here provided for, while a grand stand seating 1,500 persons overlooks grounds.

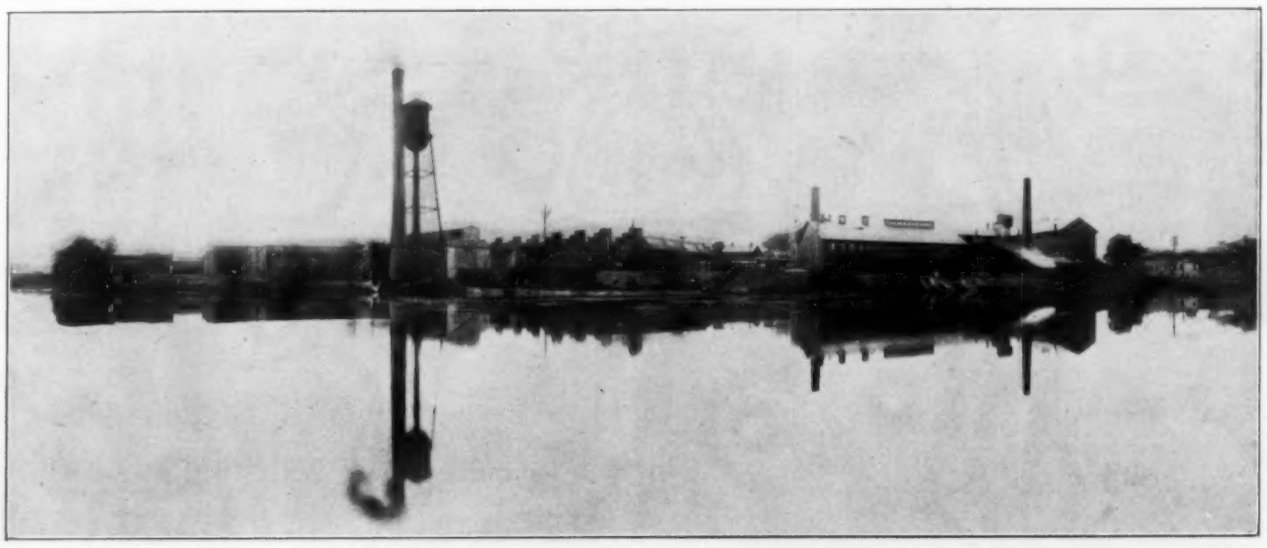
The Gun Club or Trap Shooting Department, recently organized, has found many enthusiasts. State-wide tournaments have been held at Milltown with success. The Club is now entered in the same league with other large gun clubs in the county.

How to Preserve Tread Designs

It is comparatively easy to preserve the tread design in vulcanizing repairs made on tires with non-skid treads, according to D. R. Cain, Instructor, Goodyear Tire & Rubber Company's Tire Repair School.

A tread pattern is inexpensive and easily made. First cut a ply of L F 52 fabric, 18 inches long and same width as tread. Over this lay a ply of gum of $\frac{1}{16}$ gauge, $\frac{1}{2}$ inch wider than the fabric and cover the whole well with soapstone. Then place this pad fabric side down, in the sectional mold and stand the tire, the tread design of which you wish to preserve, on this. Tighten the clamps and cure 20 minutes.

In using this pattern in the vulcanization of the tire repair twenty minutes should be added to the regular cure in order that the heat may penetrate the pad.



THE MICHELIN TIRE PLANT, MILLTOWN, N. J.

THE WHEELWRIGHT DEPARTMENT

APPLYING WIRED-ON TIRES

An Elaborate Tire Service Station

Service is a subject more generally talked of than thoroughly understood. That is because dealers and salesmen, as well as customers, still remember what was meant by the word " service " in the earlier years of motor vehicles. In those old days service was something always promised but rarely given except when evasion became impossible.

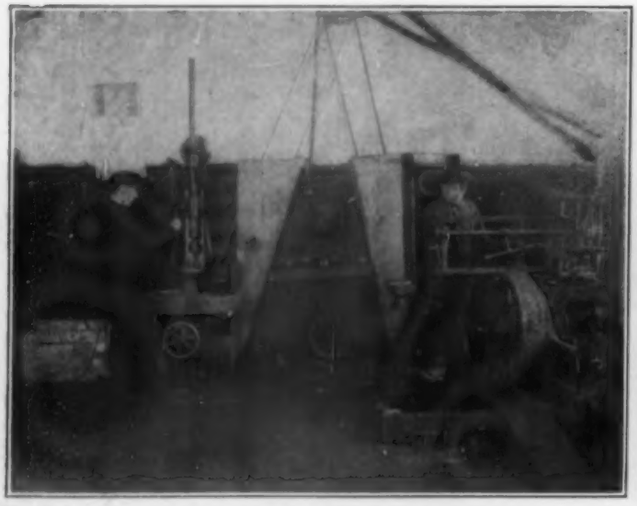
Today matters are quite different, for manufacturers have come to realize that service in connection with the sale and use of rubber tires, especially solids, is not merely an important consideration from the viewpoint of the customer, but has besides a direct sales promoting effect. It works indirectly to the advantage of the manufacturer who is hardly more interested in immediate sales than he is in the renewal of business obtained.

FIRESTONE SERVICE STATION

To hold customers and to obtain repeat orders, it is necessary to give satisfaction, and the manufacturer must see that his tires are applied in a manner that will enable them to give a maximum of mileage. He wants users to get all the mileage he has built into his tires. The surest way of attaining this object is to have experts see that tires sold are of the type and size best suited for the work required of them and that they are properly fitted.

The great numbers of motor trucks in use in the United States, and particularly the popularity of " pressed-on " tires requiring special machinery for their fitting, have caused the principal tire manufacturers to install service stations in large centers throughout this country.

These stations carry stocks of tires and machinery for fitting them. They are in charge of men who are qualified to advise as to the best sizes and types of tires required by users and know how to fit these tires to give maximum service. Besides this tire service stations give advice as to



DRILLS AND HACKSAWS

SHRINKING BAND ONTO WHEEL

how to use tires to obtain all the good that is in them.

This educational function is important, for the driver has almost as much to do with the life of tires as have the road, the load, and even the tires themselves.

THE OFFICES

Experience in building tires has perfected the manufacturing processes to such an extent that most standard tires are of uniform quality. The few imperfect tires that are found are largely due to the human element which cannot be totally eliminated from manufacturing processes. Against these defects, the user is protected by the manufacturer's guarantee.

Promptness and dispatch are important factors in solid rubber tire service. Motor trucks represent large investments, and must, therefore, be kept on the road and at work with a minimum of delay when the occasion arises for repairs to tires or wheels.

The city of New York, having more automobiles and more motor trucks than any other city in the world, naturally requires an enormous amount of both night and day tire service.

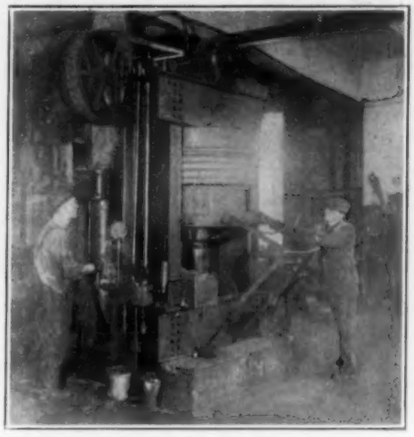
To meet this great demand for service, the Firestone Tire & Rubber Co., in 1913, erected at 63rd Street and East End Avenue a six-story service station which is particularly interesting. It is exceptionally well equipped to do the work required of it, and is probably the largest tire service station housed under a single roof.

The accompanying photographs show some views of this station and give a fairly comprehensive idea of the scope and completeness of its equipment, second only to those of the factory.

Besides carrying thousands of solid rubber and pneumatic tires, rims, wheels and wheel parts, the Firestone service station is equipped with improved up-to-date tire fitting and wheelwright machinery. It can, for instance, build or repair any kind of wheel used on automobiles from the hub out.

An idea of the amount of business handled by this station can be gathered from the fact that during a recent month it is reported to have sold nearly a thousand solid rubber truck tires, fitting most of them on the premises and delivering the others in its territory. In addition to these sales of motor truck tires, over two thousand "quick-detachable" rims of the demountable type were delivered.

REPLACING WHEEL

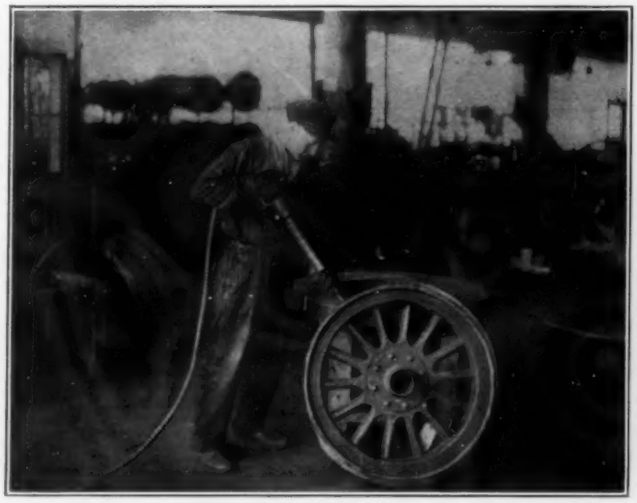


PRESSING ON TIRE

During this same period several thousand pounds of carriage tire rubber were sold and applied by means of machinery especially designed for the purpose.

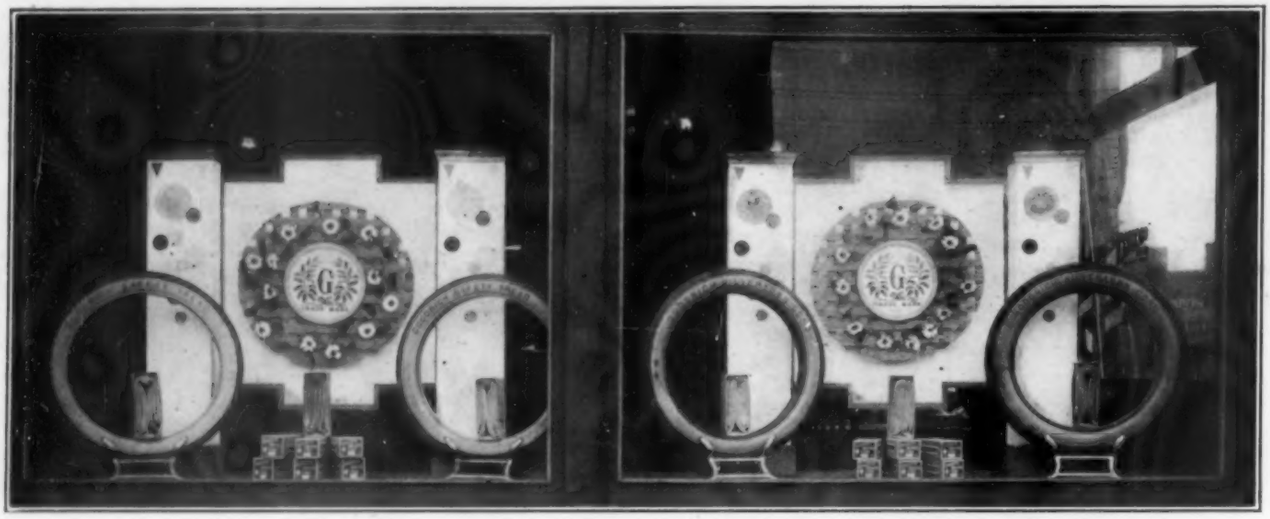
The Firestone company makes four types of truck tires: "Giant," "Pressed-On," "Quick-Removable" and "Pneumatic Non-Skid." Each of these types for a special use, and a user must only decide what his requirements are. A Firestone expert is always on hand ready to assume this responsibility for the truck owner.

Advice is unbiased and includes practical suggestions that insure the greatest measure of mileage service and efficiency that have been built into tires.



REMOVING THE OLD RIM

SOLID TIRE STOCK ROOM



The Tire Show Window as a Business Getter

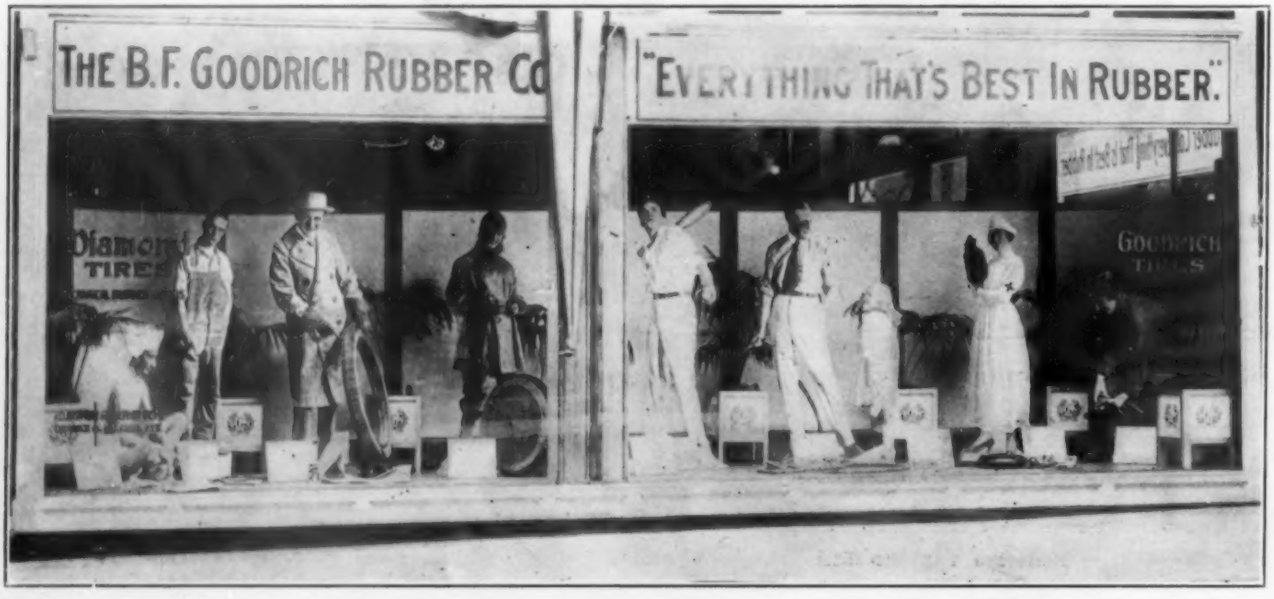
The show window is generally a neglected opportunity to the tire dealer, although there is no better way of pushing a tire into popularity than to supplement the liberal advertising policy of the manufacturer by attractive window displays.

Most tire dealers do not realize the importance of the show window for they have never had the time nor inclination to give the subject the attention it deserves. The value of the window can perhaps be most clearly shown by the use made of it in drug stores that are well located, for it is not uncommon for manufacturers of pharmaceuticals and of novelties to pay as high as fifty or one hundred dollars for the use of a drug store window for one week.

Good windows require thought and study. A window cannot be trimmed once in long while, allowed to get dusty and dirty and bring results. Changes should be made frequently. As one of the best selling mediums that the dealer has, as a salesman that does not have to receive a pay envelope every week, but works night and day and only requires a little attention, the show window should be considered as a very valuable part of the dealer's business.

The tire business is a comparatively new one, and in spite of the close competition that now exists, it lacks the still closer competition that is found in some of the older and longer established lines of business. As competition increases, the demand for closer attention to the development of the show window will be found.

Some interesting suggestions as to how windows may be pleasingly trimmed are shown in the illustrations printed herewith, which are made from photographs furnished by The B. F. Goodrich Co.



Notes of Interest to the Tire Trade

Hanes Rubber Co. Manufacturing Tires and Tubes—Fisk and Hood Report Earnings—Ajax and Amazon Declare Dividend—Dunlop Increases Stock—Mason Changes

Ajax Declares Dividend

The regular quarterly dividend of $1.50 a share was declared this week by the Ajax Rubber Co. New York. It is payable September 15 to stockholders of record August 31.

Hanes Rubber Co. Is Operating

The Hanes Rubber Co., with a capital stock of $500,000, has been organized at Winston-Salem, N. C., to manufacture au-

tomobile tires and tubes. Two years have been spent in constructing the plant and purchasing the equipment. The first tire was turned out in August.

The company is making Hanes plain tread, Hanes "Ground Gripper" Non-Skid Tread, Hanes Red Tubes and Hanes Gray Tubes. A cord tire will be added.

The present equipment allows an output of 300 tires per day, but this capacity will be doubled when the equipment now ordered is installed. The tires are made by the single cure, wrapped tread process.

The officers and owners of the company are A. S. Hanes, for eleven years head of the Hanes Hosiery Mills, and John W. Hanes, formerly with the American Tobacco Co. and the Delion Tire Co. of Trenton, N. J. Chris Miller, who has been with Dunlop, in England, Michelin, in France, and Continental, in Germany, is general factory manager.

Changes in the Mason Organization

George C. Van Veen has been appointed manager of the new Chicago direct factory branch of the Mason Tire & Rubber Co., Kent, Ohio, which has recently been opened at 2120 Michigan Boulevard, Chicago, Ill. Mr. Van Veen in addition to being Chicago branch manager will have charge of the sales of Mason tires for the entire central district of the United States. He has been branch manager in Kansas City since that office was opened. His work there was so successful that he has been given promotion to Chicago.

Mr. Van Veen started his business in the automobile industry in New York, but soon entered the tire field with the Ajax-Grieb Co., and was located in the Middle West. He left this concern to enter the retail tire business in Detroit, later selling out to become associated with the Mason Tire & Rubber Co.

John H. Diehl has been appointed general sales manager of the company. He entered the field in 1894 with The B. F. Goodrich Co., and joined the Portage Rubber Co. as sales manager at the time of its organization in 1912. He has been with that organization in the position of manager of sales for the last five years.

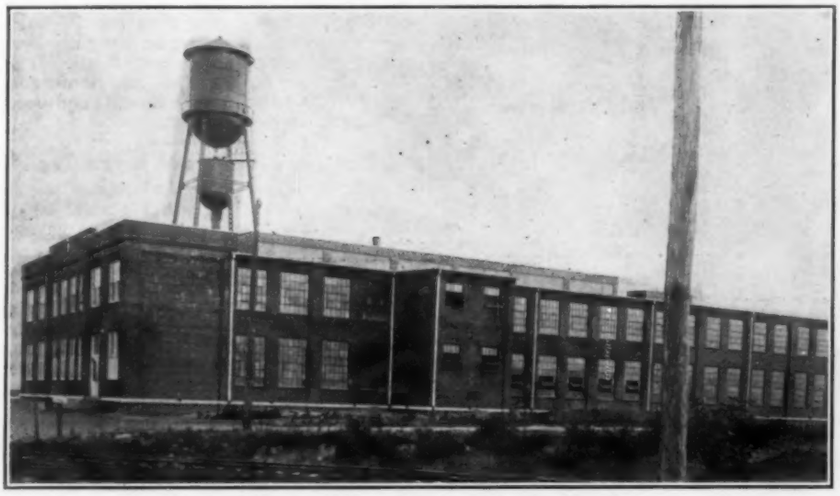
H. C. Smith has been appointed manager of the Kansas City branch of the company.

Hawkeye Installs New Machinery

New equipment has been installed in the factory of the Hawkeye Tire & Rubber Co., Des Moines, Ia., enabling the company to increase its capacity to 600 tires a day. Heretofore it has been doing purely a local business, supplying dealers within the Des Moines territory, most of its dealer customers being stockholders. The business has, however, prospered to such an extent that it has been decided to expand the output and enter new territory. The first connection is with the Kissey Auto. Supply Co., Los Angeles, Cal.

J. P. Cahoon with Robert Graves

J. P. Cahoon has joined Robert Graves, Jr., distributor of Gryphon tires, in New York for the Eastern district.



THE HANES PLANT AT WINSTON-SALEM, N. C.

Fisk Rubber Earnings

The Fisk Rubber Co. for the half-year to June 30 last showed a considerable gain in gross and net profits. The total sales for the period of $15,714,971 were $4,000,000 less than for the entire 1916 year, when they totaled $19,457,788. Net income, after depreciation and interest, was, however, larger for the half-year than for the entire twelve months of 1916. The actual net for the first six months was $1,983,627, as compared with $1,836,829 in 1916.

As of June 30, Fisk Rubber had outstanding three classes of preferred stock aggregating $13,525,000. After allowing for all the preferred dividends for the period, totaling $473,370, the balance, or $1,510,257, is equal to $19 a share on the $8,000,000 common, or at the annual rate of $38 a share. On the same basis of capitalization, Fisk Rubber earned in all of last year a little more than $11 a share on the common. On June 30 last, Fisk had net quick assets of $10,726,267.

A Tire Changing Meet in Honolulu

That motorists of Honolulu, Hawaii, might become more familiar with the ins and outs of tire changing, a big tire changing meet was recently arranged in that city and staged at one of the city's theatres. Fifteen two-men teams competed for championship honors in this novel contest. The contest covered deflation of the tire, removal of casing from the rim and tube from the casing, replacement of tube and casing, and inflation of the tire to fifty pounds pressure. The time of the winning team was one minute, forty-seven seconds.

Cotton for Tires from Brazil

That the scarcity and high prices of long-staple Egyptian and Sea Island cotton is driving manufacturers of tire fabrics to seek new sources of supply is evidenced by the recent shipment of 35,600 kilograms (78,484 pounds) of this grade staple from Pernambuco, Brazil, to New York, a quite unusual occurrence.

Dunlop Increases Stock

At the June meeting of the shareholders of the Dunlop Rubber Co., Ltd., London, the capital stock, it is learned through mail advices, was increased to £6,000,000 by the creation of £3,000,000 new 7 per cent. preference "C" shares of £1 each, 10 shillings per share to be called up at once and the balance not for a year at least.

Fabricord Tire Co. Increases Capital

The Fabricord Tire Co., Chicago, Ill., has increased its capital stock from $2,000,000 to $5,000,000. It was incorporated only a few months ago to make an automobile tire of novel construction.

Keystone Holds Annual Meeting

At the annual meeting of stockholders of the Keystone Tire & Rubber Co., held recently in New York City, L. Walor Lissberger was re-elected president and Joel Jacobs again made secretary-treasurer.

H. E. Fry Joins Globe

H. E. Fry, formerly with the tire adjustments department of the New York branch of the Goodyear Tire & Rubber Co., is now in charge of the same department of the Globe Tire Co., Inc., New York.

Ajax Rubber Co. of Canada to Build

Ajax Rubber Co. of Canada, Ltd., will build a factory in London, Ont., which will cost $300,000 and employ more than 400 persons.

Items for the Tire World

"Off-An-On" Tire Tool Now on Market—Three Trucks Added to Akron-Boston Transportation Line—The Twombly Tire Foot Pump—The Shaler Vulcanizer

The "Off-An-On" Tire Tool

A new tool to take off and put on tires without going inside the tire has been placed upon the market in the "Off-An-On" tire tool. The instrument works between the tire bead and the rim only, and it is claimed will prevent the damaging of inner tubes. By means of the "Off-An-On" tool, the tire is closed at the bottom first, so that no matter how muddy the wheel may be, no dirt, gravel or sharp stones can fall in on the inner tubes. The tool, which is especially designed for use on Ford cars, is manufactured by the Stewart Accessories Mfg. Co., Detroit, Mich.

Hayes Tire Carrier

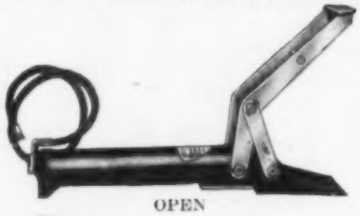
A new spare tire carrier, specially designed for Ford and Chevrolet cars, has been placed on the market by the Ougaard Auto Necessities Co., 982 Woodward avenue, Detroit, Mich. This device consists, essentially, of a flanged metal rim that is expanded by means of a lever, which may be padlocked.

The rim fits the tire so closely that no mud or dirt can get inside of it. Provision is made for carrying the license number and tail light attached directly to the tire carrier.

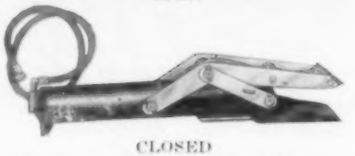
Hayes tire carriers are made for one and two tires.

Tire Foot Pump

A foot pump that will put 80 pounds pressure in a tire by exerting approximately 20 pounds of weight upon the pedal is the claim made for the Twombly Tire Foot Pump. It has been placed upon the market in an effort to replace the hand pump which requires about 80 pounds of weight to secure the same amount of pressure. This new pump, 17 inches long and 3¾ inches square, is manufactured by the Schlesinger Redburn Corp., New York City.



OPEN



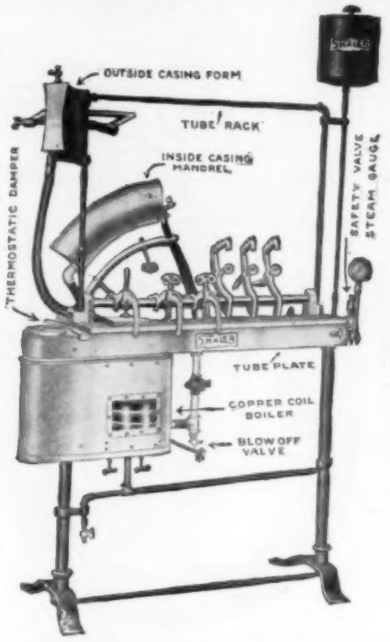
CLOSED

The Jensen Tire Pump

A new hand power pump, the Jensen Tire Pump, claimed to inflate as much as 90 pounds pressure with comparatively little effort has been placed upon the market by the W. H. Howell Company, Geneva, Ill.

The Shaler Vulcanizer

The Shaler vulcanizer shown in the accompanying illustration is one of fifteen types manufactured by the G. A. Shaler Co., Waupun, Wis. In the model shown the heat is distributed to the vulcanizing surfaces by steam generated by a gasoline or gas burner, covering all requirements of a garage or repair shop. Tubes are repaired on a machined surface which can handle up to six tubes at one time, and which can be heated independently of the casing repair parts when necessary.



One of the most important features of the vulcanizer is the automatic temperature control, which the company claims does away with all watching or regulating after the burner is started. The boiler, a coil of copper tubing, raises steam in about twenty minutes and holds it at the correct temperature indefinitely, automatically regulated by a thermostat. The manufacturers claim that the vulcanizer can handle 200 tubes and a dozen casings a day.

The Akron-Boston Truck Line

The capacity the Akron-Boston motor transportation line established several months ago by the Goodyear Tire & Rubber Co. has just been increased by the addition of three trucks to the Packard which has been operating on a regular seven-day schedule, since last April. The fleet of two Whites and two Packards, now carrying tires to the East, is equipped with pneumatic cord tires.

New Shop Record and Repair Tag

A handy shop order and repair tag is now being marketed, which should be of value to the small repair men or garage owner.

This tag on one side has blank spaces for the car owner's name, date received, trouble, clerk's name, and other details. Attached to the tag is a check receipt bearing a serial number similar to the one stamped on the tag itself. On the reverse side of the tag is a space for time and material used on the job.

These tags, printed on light cardboard, with a reinforced string hole and string, are numbered serially and printed in large quantities. They are manufactured by Stevens & Co., 375 Broadway, New York City, and sell at $5 per thousand.

A Novel Advertising Service Car

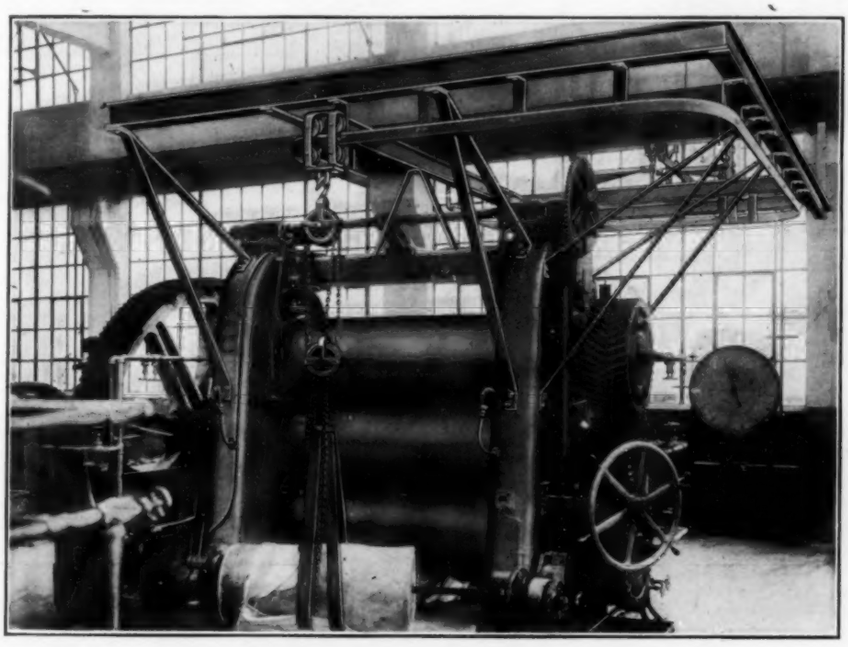
A unique service car designed by the Amazon Rubber Co. for their Troy, N. Y., dealer is shown above. The car is painted a bright yellow with black hood and running gear. An inflated tire on a rim is bolted upright on the box. Besides being a practical service car it is attractive and noticed by practically every one on the streets.

J. DUNCAN CO.

Our Equipment in Use at Fisk Rubber Co.

OVERHEAD TROLLEY SYSTEMS

For the economical handling of tires, cores, moulds and every description of rubber goods. Economizes floor-space—promotes convenience. CUTS YOUR COSTS.



Installed at Boston Woven Hose & Rubber Co.

The above illustration shows the application of our system to a Farrell Collander, which for compactness, reliability and efficiency is particularly interesting to manufacturers of rubber goods. This is only one of the many different methods we have in use for handling the large rolls of material. Inquiries are solicited for further details as to sizes and capacities.

J. DUNCAN CO., 7 FULTON PLACE, BOSTON, MASS.

Classified Buyers' Index To Rubber Factory Equipment

Below is printed an alphabetical list of the principal machinery and other equipment used in rubber factories, compiled from information supplied by the manufacturers. The key symbols placed after the items refer to the names of the manufacturers that make them, as shown in the list of Manufacturers of Rubber Factory Equipment, that is printed elsewhere on this page.

Accumulators, A11, B23, F3, T31, W31.
Autoclaves, A11, B31, D15, E11, S55.

Balances, B7, E11, S19, T27.
Bins, Stock, O3.
Blocks, Pillow, A11, F3, T43.
Blowers, Tube Splicing, G3.
Boilers, Steam, S31.
Boosters and Exhausters, A3.
Boxes, Compound, O3.
Brands, Aluminum, D19.
Brakes, T43.
Brushes, O7.
Buckets, D27.

Cages, D27.
Calenders, A11, F3, S31, T43.
Calenders, Embossing, F3, H11, T19, T43.
Cars, Shoe, O3.
Carton Filling Machines, W23.
Carton Making Machines, W23.
Castings, A11, B3, B23, B31, D27, F3, M3, T31, T43, W31.
Chemical Apparatus, B31.
Chucks, S47.
Clutches, Brake, F3, T43.
Clutches, Friction, F3.
Clutches, Magnetic, F3, T43.
Compressors, Air, S31, T31.
Condensers, D15, S55, T31.
Conveyors, D27.
Cores, Tire, A11, B3, T31, J3.
Couplings, Power, T43.
Crackers, A11, F3, T43.
Cranes, D27.
Cutters, Baby Carriage Tire, W23.
Cutters, Band, A11, E3, H31, R7.
Cutters, Bias, W23.
Cutters, Duck Plug, W23.
Cutters, Gaskets, A11, H11, H31.
Cutters, Raw Stock, W23.
Cutters, Rubber Stock, H19, H31, R7, T11.
Cutters, Scrap, A3, T11.
Cutters, Strip, E3, F3.
Cutters, Tubing, W23.

Devulcanizers, B11, D15.
Dies, A11, D19, H11, D19.
Die Sinking, A11, D19, H11.
Dies, Cutting, D19, H11.
Digestors, D15.
Dipping Machines, O3.
Doubling Machines, F3, T43.
Doubling Machines, Fabric, T17.
Drills, D27.
Drives, A11, D27, F3, T43.
Drives, Chain, D27, F3, T43.
Drives, Motor, A11, D27, F3, T43.
Drums, Bead, A11, T31.
Drums, Tire Machine, G3.
Drums, Tread, A11.
Dryers, A35, B31, D15, H27, S31, S55.
Dryers, Fabric, C51, D15, T19, T43.
Dryers, Rubber, D15.
Dryers, Vacuum, D15, S55.
Dynamometers, S19.

Engines, Steam, S31.
Engraving Machines, Hard Rubber, A11.
Experimental Outfits, A11, B3, D15, D19, E11, F3, T43.
Extractors, E11.

Fittings, Hydraulic, A11, B23.
Fittings, Water, A11.
Folders, Belt, F3.
Forms, Dipping, D19.

Gages, Pressure, B23, S7.
Gages, Recording, S7.
Gages, Thickness, H11.
Gears, A11, F3, M23, T43.
Governors, Pump, M15.
Grinders, A11, F3, S47, T43.
Grinders, Hard Rubber Dust, A3, A11, F3, R3, T43.

Hammers, Steam, B31.
Hangars, D27, M27.
Hoists, D27.
Holders, Form, O3.
Hooks, Tire, D27.
Hose Machines, F3, R27.
Hydraulic Machinery, A11, B23, F3, H19, T43, W31.
Hydrometers, T7, T27.

Ice Machines and Equipment, D27.
Impregnators, B31, D15, F3, S55.
Instruments, Recording, S7, S19.
Insulating Machines, R27.

Joints, Expansion, A11, B23.

Kettles, A11, B31, D7, D15, S31, S55.
Knives, H31, J7, R7, T43.
Knives, Calender, R7.
Knives, Jar Ring, R7.
Knives, Mill, R7.
Knives, Tapping, R7.

Laboratory Apparatus, D7, D15, E11, F3, R27, S15, S19, T27.
Ladders, Rolling, M27.
Lathes, Hard Rubber, A11, S47.
Lathes, Jar Ring, A11, T31, W23.
Lathes, Wrapping, A11.
Lockers, O3.
Looms, Hose, R27.

Magnets, D23.
Mandrels, A11.
Markers, Shoe, H11.
Microscopes, E11, T27.
Mills, Grinding, A3, A11, E11, F3, R3, D7, T43.
Mills, Mixing, A11, D7, F3, T43, W7.
Mills, Paint, D7, R3.
Mills, Washing, A11, F3, T43, W7.
Mixers, Solution, D7, W7.
Molds, Hose, A11.
Molds, Mechanical, A11, D19, H11, H19, M3, T15, J3, D19.
Molds, Sole and Heel, D19, J3, D19.
Molds, Sundries, D19, H11, J3, D19.
Molds, Syringe Bag, D19, J3, D19.
Molds, Tire, A11, B3, T31, J3, D19.
Molds, Toy, D19, J3, D19.
Molds, Water Bottle, D19, J3, D19.
Motors, D27, E11, T43.

Name Plates, H11.

Pattern Making, A11, M3, T43.
Percolators, D7, D15, E11, S55.
Plaiters, W23.
Plantation Machinery, F3, T43.
Plants, Aniline Oil, D15.
Presses, Baling, B23.
Presses, Bead, A11, B23, F3, W31.
Presses, Belting, A11, B23, F3, T43, W31.
Presses, Blocking, B23.
Presses, Filter, A3.
Presses, Forcing, A11, B23, T43, W31.
Presses, Hand, A11, B23, E11, F3, H19.
Presses, Heater, A11, B11, F3, W31.
Presses, Hydraulic, A11, B23, F3, H19, T19, T31, T43, W31.
Presses, Plate, A11, B23, F3, W31.
Presses, Sheeting, A11, B23, F3.
Presses, Shoddy, A35.
Presses, Tire Setting, A11, B23, W31.
Presses, Vulcanizing, A11, B11, B23, F3, T31, W31.
Pulverizers, A3, D7, E11, R3.
Pumps, A3, A11, E11, M27, S31, T31.
Pumps, Centrifugal, T31, W31.
Pumps, Hydraulic Pressure, A11, B23, S31, T31.
Pumps, Spray, M27.
Pumps, Vacuum, A3, B31, D15, E11, S31, S55, T31.

Racks, Drying, D7, D27.
Racks, Shoe Car, H11, O3.
Racks, Tire, D7, D27, O3.
Railways, Industrial, D27.
Reclaiming Machinery, B11, D7, F3, R27, S55, T43.
Refiners, A11, F3, T43.
Regulators, Damper, M15.
Regulators, Pressure, D3, M15, T7.
Regulators, Pump, M15.
Repair Equipment, Tire, B11.
Riveters, W31.
Rollers, Hand, B3, H11, H19.
Rollers, Strip, B3.
Rolls, A11, F3, T43.
Rolls, Chilled, A11, T43.
Rolls, Cooler, F3.
Rolls, Engraved, F3, H11.
Rolls, Mill, A11, F3, T43.
Rolls, Sand, A11, F3, T43.
Rolls, Steel, F3.
Rolls, Wood, G3.

Safety Appliances, D27, F3.
Scales, B7, D27.
Screens, D7, O3.
Screw-Downs, Calender, A11, T43.
Separators, Air, R3.
Separators, Magnetic, D23.
Separators, Water, A35.
Shafting, A11, D27, F3, T43.
Shears, Hand, J7.
Shears, Power, F3.
Shells, Belting, G3.
Shells, Calender, C55, O3
Shells, Stock, G3.
Sifters, D7.
Sifters, Brush, D7.
Slitting Machines, F3.
Skivers, J7, R7.
Solvent Recovery Apparatus, B31, D15, S55.
Special Machinery, J3.
Spreaders, A11, F3, T43.
Sprockets, D27, M23, T43.
Stamps, Steel, D19, H11, D19.
Stands, Tire, A11, B3, T31.
Starters, Motor, T43.
Sticks, Shoe, H11, O3.
Stitchers, B3, H11.
Stops, Safety, D3, D27, F3, T43.
Strainers, A11, R27.
Stretchers, Belt, A11, F3, T19, T43.
Stretchers, Hydraulic, A11, F3, T43.
Switches, Electrical, D27, T43.

Tables, Calender, O3.
Tables, Cooling, D27, O3.
Tables, Tire Conveying, O3.
Tanks, Acid, B11, D15, S55, T19.
Tanks, Soaking, B11, S55, T31.
Testing Machines, B11, S19.
Thermometers, E11, S7, T7, T27.
Tire Making Machines, B3, R27, T31.
Tire Tread Machines, R27.
Tire Wrapping Machines, Cloth, T15, T31, T43.
Tools, Fountain Pen, S47.
Tools, Rubber Workers', H11, H31.
Tramways, Overhead, D27, O3.
Transmissions, A11, D27, M23, T43.
Traps, Steam, D3.
Trimmers, W23.
Trolleys, D27.
Trucks, Industrial, D7, D27.
Tube Wrapping Machines, A11, T43.
Tubing Machines, A11, R27.

Valves, Float, M15.
Valves, Hydraulic, B23, D27, T31, W31.
Valves, Reducing, D3, D27, M15.
Vulcanizers, A11, B11, D15, T31, W31.

Washers, A11, D15, F3, T43.
Washers, Beater, T43.
Washers, Tub, D7, F3, T43.
Wheels, Buffing, O7.
Wheels, Roller Bearing, D27.
Wire Drawing Machines, T43.
Wiring Machine, Hose, A11.
Wrapping Machines, A11, T15, T31.

Manufacturers of Rubber Factory Equipment

THE RUBBER AGE AND TIRE NEWS will gladly supply information regarding the addresses and products of the following manufacturers of Rubber Factory Equipment.
The advertisements of concerns whose names appear in bold face type will be found in this issue of THE RUBBER AGE AND TIRE NEWS.

A 3—Abbe Engineering Co.
A 7—Adams, John J.
A 11—Adamson Machine Co.
A 15—Adamson Mfg. Co.
A 19—Air Utilities Co., Inc.
A 23—Akron Rubber Mold & Machine Co.
A 27—Allen Machinery Co.
A 31—Alvey-Ferguson Co.
A 35—American Process Co.
A 39—American Rotary Valve Co.
A 43—American Tool & Machine Co.
A 47—Arthur Vulvanizing Machine Co.

B 3—Banner Machinery Co.
B 7—Becker, Christian, Inc.
B 11—Biggs Boiler Works Co. See Advertisement on Page 463.
B 15—Birmingham Iron Foundry.
B 19—Bonnett Co.
B 23—Boomer and Boschert Press Co. See Advertisement on Page 460.
B 27—Bristol Co.
B 31—Buffalo Foundry & Machine Co.

C 3—Cameron Machine Co.
C 7—Cell Drier Machine Co.
C 11—Champion Shoe Machine Co.
C 15—Chernack Mfg. Co.
C 19—Chicago Mold & Machinery Co.
C 23—Edred W. Clark.
C 27—Colonial Sign & Insulator Co.
C 31—Continental Rubber Works.
C 35—Cox, Geo. P., Last Co.
C 39—Crane Co.
C 43—Curtis & Marble Machine Co.
C 47—Cutler-Hammer Clutch Co.
C 51—Cutter, G. A., Sales Agent.
C 55—Cylinder Mfg. Co.

D 3—Davis, G. M., Regulator Co.
D 7—Day, J. H., Co.
D 11—De Mattia Bros.
D 15—Devine, J. P., Co.
D 19—Die Sinking & Machine Co. See Advertisement on Page 462.
D 23—Dings Magnetic Separator Co.
D 27—Duncan, J., Co. See Advertisement on Page 457.

E 3—Eastman Machine Co.
E 7—Eggers, William, & Sons.
E 11—Elmer & Amend.
E 15—Esterline Co.
F 3—Farrel Foundry & Machine Co.
F 7—Ford Chain Block & Mfg. Co.
G 3—Gammeter, W. F. See Advertisement on Page 459.
G 7—Garvin Machine Co.
G 11—General Electric Co.
G 15—Goodnow, L. H., Foundry Co.
H 3—Hartford Special Machinery Co.
H 7—Haywood Tire & Equipment Co.
H 11—Hoggson & Pettis Mfg. Co. See Advertisement on Page 458.
H 15—Hollander & Johnson.
H 19—Holmes Bros.
H 23—Housatonic Machine & Tool Co.
H 27—Hunter Dry Kiln Co. See Advertisement on Page 458.
H 31—Hyde Manufacturing Co. See Advertisement on Page 458.
J 3—Jones & Kuhlke. See Advertisement on Page 459.
J 7—Judson Cutlery Co.
K 3—Knott, L. E., Apparatus Co.
K 7—Kohl Mfg. Co.
L 3—Lander Last Co.
L 7—Landis Machine Co.
L 11—Lenz & Naumann.
L 15—Link Belt Co.
L 19—Lloyd, John, Co.
L 23—Lobdell Car Wheel Co.
M 3—McFarland Foundry & Machine Co.

Manufacturers of Rubber Factory Equipment—Continued

M 7—McGrory, Philip.
M 11—Mahlow & Wykoff.
M 15—Mason Regulator Co.
M 19—Miller, Chas. E.
M 23—Morse Chain Co.
M 27—Myers, F. E., & Bro.
N 3—New England Butt Co.
N 7—Norton, M., & Co.
O 3—Ornamental Iron Works Co.
O 7—Osborn Mfg. Co.
P 3—Pierce Wrapping Machine Co.
R 3—Raymond Bros., Impact Pulverizer Co.
R 7—Richard Co., Inc., Stephen.
R 11—Riehle Bros., Testing Machine Co.
R 19—Ross, Charles, & Son Co.
R 23—Rossman, Roy G.
R 27—Royle, John, & Son.
S 3—Sargent, E. E., & Co.
S 7—Schaefer & Budenberg Mfg. Co.
S 11—Schuchardt & Schutte.
S 15—Scientific Materials Co.
S 19—Scott, Henry L., & Co.
S 23—Sessions, J. H., & Sons.
S 27—Shaler, G. A.
S 31—Shartle Machine Co.
S 35—Shoe Hardware Co.
S 39—Singer Sewing Machine Co.
S 43—Smith-Backmann Machine Co.
S 47—Smith Co., James M.
S 51—Southwark Foundry & Machine Co.
S 55—Stokes, F. J., Machine Co.
S 59—Summit China Co.
T 3—Tagliabue Mfg. Co.
T 7—Taylor Instrument Co.
T 11—Taylor, Stiles & Co.
T 15—Terkelsen & Wennberg.
T 19—Textile Finishing Machine Co. See Advertisement on Page 462.
T 23—Textile Machine Co.
T 27—Thomas Co., Arthur H.
T 31—Thropp's, John E., Sons Co.
T 35—Trefethen, F. L.
T 39—Troemner, Henry.
T 43—Turner, Vaughn & Taylor Co. See Advertisement on Page 464.
U 3—Utility Mfg. Co.
V 3—Venn, Frank.
W 7—Werner & Pfleiderer Co.
W 11—Westinghouse Electric Mfg. Co.
W 15—Williams Foundry & Machine Co.
W 19—Williams Patent Crusher & Pulverizer Co.
W 23—Wills, Arthur J.
W 27—Wolff Co.
W 31—Wood, R. D., & Co.
W 35—Work, Joseph W.

WHAT YOU HAVE BEEN LOOKING FOR

RED SULPHURET *of* ANTIMONY

"MADE IN AMERICA"

The Dealer Recommends Red Tubes—The User Prefers Them
Why Not Satisfy That Demand and make ANTIMONY RED TUBES exclusively?
They Cost No More Than Pure Gum Greys

CONSIDER THE POINT YOUR ADVERTISING MANAGER COULD MAKE

For Particulars, Red, also Golden, Apply

FRAZAR & COMPANY

ESTABLISHED 1856

50 CHURCH STREET NEW YORK

J. A. KENDALL
Second National Bldg.
AKRON, OHIO

REPRESENTED BY
FRED L. MOSES
220 Devonshire Street
BOSTON, MASSACHUSETTS

R. NORTHCOTE & CO.
Canadian Pacific Bldg.
TORONTO, ONT.

H. MUEHLSTEIN & CO.

BUY and SELL

Any Grade **SCRAP RUBBER** Any Quantity

NEW YORK
3rd Ave. & Harlem River

CHICAGO
114 W. Van Buren Street

AKRON
311 Second Nat'l Bldg.

BOSTON
176 Federal Street

MONTREAL
32 Colborne Street

CABLE ADDRESS
"STEINMUL" NEW YORK

LONDON, ENGLAND
124 Minorles

TIRE FABRICS

OF EVERY DESCRIPTION

TAYLOR, ARMITAGE & CO., Inc.

Equitable Building, 120 Broadway, New York

SEA ISLANDS EGYPTIANS PEELERS

FABRICS TO SPECIFICATION

PASSAIC COTTON MILLS AMERICAN TIRE FABRIC CO.

MARLBORO COTTON MILLS

McColl, S. C.

Tire Fabrics and Yarns

SALES MADE DIRECT

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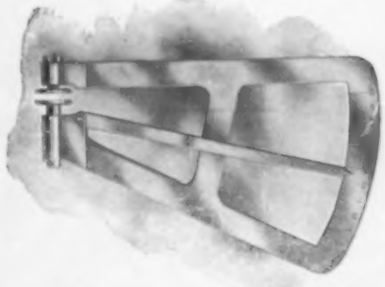

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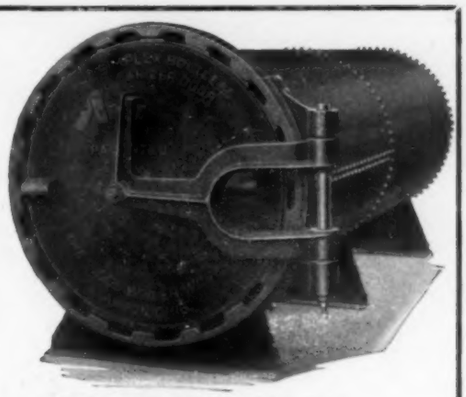

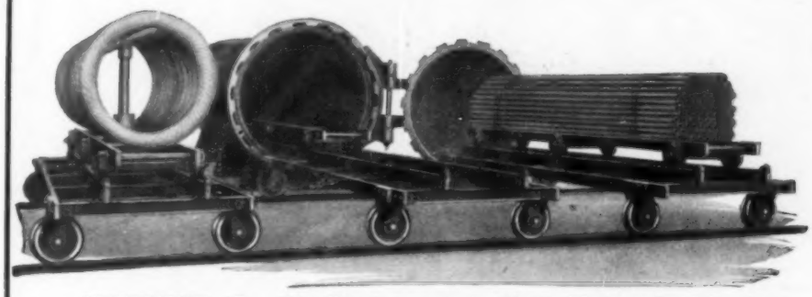

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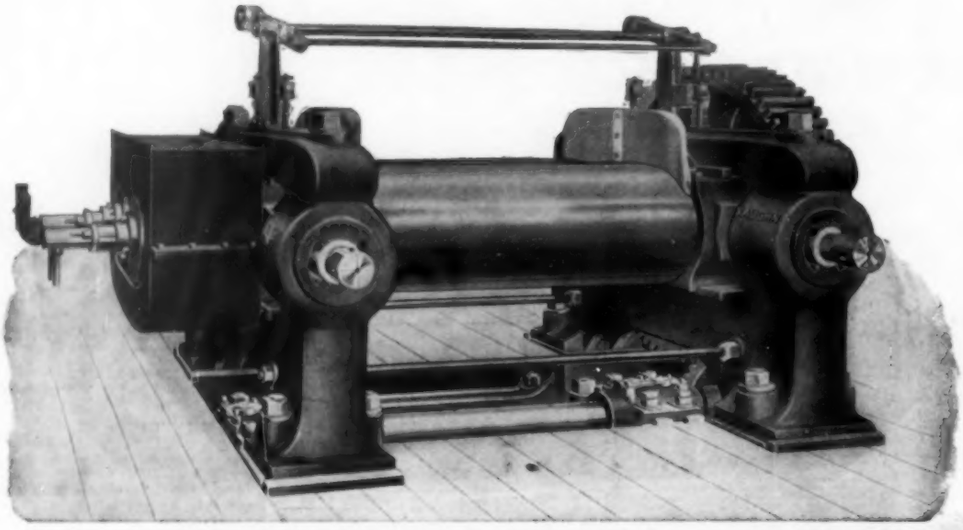

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